

The Commercial Car Journal

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BRICK ROADS FOR COUNTRY AND CITY

Country roads paved with vitrified brick are becoming quite common in many of our states, according to the professional bulletin "Brick Roads," recently issued by the Office of Public Roads and Rural Engineering, U. S. Department of Agriculture.

The principal advantages which brick roads possess, according to the authors, is that they are durable under practically all traffic conditions, and are easily maintained and kept clean.

The principal disadvantage is the high first cost. The defects which frequently result from lack of uniformity in the quality of the brick or from poor construction are usually to be traced indirectly to an effort to reduce the first cost or to a popular feeling that local materials should be used, even when of inferior quality.

The purpose of the new bulletin, which can be had free, as long as the Department's supply lasts, by road engineers, supervisors and others contemplating the construction of brick roads, is to make clear certain important essentials in the choosing of brick for a pavement and in laying it so that the highway will endure.

The remainder of the 40-page bulletin is devoted to detailed descriptions and diagrams, showing proper methods of construction of brick roads, including the preparation of the road bed, the construction of the foundation or base, the laying of the brick, the construction of curbing, expansion cushions, and the final finishing of the pavement. The paper also includes a chapter on cost of brick pavements. Special emphasis is laid on the maintenance of these roads and the need for proper engineering supervision in their construction. An appendix is devoted to typical specifications for constructing brick roads.

TORBENSEN GEAR & AXLE COMPANY CHANGES NAME

Torbensen Gear & Axle Co., Cleveland, Ohio, has been taken over by the Torbensen Axle Co., capitalized at \$1,000,000 preferred and \$750,000 common. The main plant of the company is at 1115 E. 152nd St., where four acres of land and a number of mill buildings, etc., have been secured. The officers of the new concern are: V. V. Torbensen, president; W. J. Baxter, vice-president; J. O. Eaton, treasurer, and A. H. Ide, secretary. These officers, with S. H. Tolles, make up the directorate. W. F. Rockwell is works manager; R. A. Bruce, sales manager, and C. I. Ochs, purchasing agent.

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NEW FIFTEEN HUNDRED POUND REPUBLIC TRUCK MAKING TRANSCONTINENTAL TOUR

An unusual feat for a light delivery truck is being undertaken by the latest addition to the Republic line, which is known as the new Model "9," capacity 1500 lbs., and which will sell for \$750 complete with electric lights.

The truck started October 5th from the factory of the Republic Motor Truck Co., at Alma, Mich., under the able guidance of Lester Poyer and H. L. Dewey.

The truck will visit the various Republic dealers en route touching Chicago, St. Louis, Omaha, Kansas City, Pueblo, Denver, Cheyenne, Wyo., Salt Lake, Reno, San Francisco, and arriving at Los Angeles, 3760 miles in all.

The truck carries a 1000 lb. load and bears the legend, "Republic Despatch." The constructional details of this new Republic model are different from the ordinary light delivery truck and will be illustrated and described in the next issue of the COMMERCIAL CAR JOURNAL.

NEW TRANSPORTATION RECORD ESTABLISHED BY ARMY TRUCKS

A new record in transportation annals has just been established by the United States Army Truck Train No. 13, by its overland run from Columbus, N. M., to San Antonio, Tex. The train was composed of thirty-one 3-ton Riker trucks, made by the Locomobile Co. of America, and was commanded by Captain John A. Pearson, Eleventh Cavalry.

The distance covered was more than 800 miles and was negotiated in 13 days' actual running time. Two days were spent in El Paso and two on the road, making the total elapsed time 17 days. According to the United States Army regulations, the standard day's travel for a four-mule team is 17 miles. Thus it would have required at least 47 days, exclusive of the four days' loss en route, for this trip to have been made by mule-train—a comparison which shows clearly the relative merits of the old and new style of military transportation.

With the exception of a stretch of about 30 miles, leading into San Antonio, there was practically no road at all. The greater part of the route was across untrailed desert, whose only tractive surface was a thin sun-baked layer over the bottomless sand. Sometimes it was necessary for the men to build roads for the trucks from fire wood taken from the Chuck trucks. All told, about 58 miles were made in this way. Added to that it was necessary to ford streams, flooded by the torrential rains of the border district, and pull through long stretches of "gumbo" mud, which one driver says is "several multiplied by one hundred times as bad as Wisconsin red clay." In spite of all this Truck Train No. 13 averaged better than 66 miles a day running time.

GRAMM-BERNSTEIN Co., Lima, Ohio, has reorganized in order to properly take care of its rapidly growing business. The new company is known as the Gramm-Bernstein Motor Truck Co., and has a capital of \$4,000,000, \$3,000,000 of which is common and \$1,000,000 preferred, the shares having a par value of \$10 each. Mr. Bernstein will continue as president and treasurer, and B. A. Gramm, as vice-president and general manager; H. O. Bentley, as secretary, and local counsel, and R. H. Spear as director of sales. Additional factory buildings are needed, and the work on a new office building will be started in a short time.

Make your product pay—advertise in the CCJ

Personal Items

Leon Abbott, formerly manager of the service department of the Chase Motor Truck Co., Syracuse, N. Y., has been appointed assistant sales manager.

W. T. Norton has sailed for London, where he will inspect Selden trucks in service and will also visit the Continent and inspect Selden trucks in France.

C. N. Gillette, formerly traveling sales representative in the southern territory for the Chase Motor Truck Co., Syracuse, N. Y., has been transferred to the New York branch.

Ralph Hirsch, formerly of Hirsch & Spring, St. Louis, Mo., has joined the sales force of Bittel-Leftwich. Mr. Hirsch will have charge of the Kelly-Springfield department.

Clarence I. Albach, who has been with the Firestone Tire & Rubber Co. and the Gibney Tire & Rubber Co., selling truck tires in the St. Louis district, has joined the city sales force of the White Co.

J. I. Moore has joined the sales force of the Chase Motor Truck Co., of Syracuse, N. Y. For the past several years he has been connected with the International Harvester Co. in its motor department.

A. P. Siegmund has been appointed manager of the truck department of the Detroit Electric Car Co. The Detroit Co. handles the Ward electric trucks and other vehicles with capacities of from 750 lbs. to 5 tons.

M. E. Laux, who was formerly connected with the Buick Sales Co., is now conducting the Racine Buick Sales Co. at the old stand and is devoting all his time to the selling end. He handles Buick pleasure cars and Smith Form-a-Trucks.

John A. Bell, manager of the Chicago branch of the White Co., has been transferred to the White factory in Cleveland to take up special work for the home office sales organization. Wallace C. Capen, of the St. Louis branch, succeeds Mr. Bell in Chicago.

Maurice Brennan, formerly secretary of the Duplex Engine-Governor Co., Inc., has resigned that position and is now connected with Herz & Co., civil engineers, New York City, in a general way, and will have charge of advertising, sales and purchasing as well as numerous other details.

William M. Sweet, for ten years general manager of The Motor and Accessory Manufacturers, the national organization of the accessory industry, has resigned to become assistant to president of the United Motors Corp., New York. This organization is a holding company recently formed and its subsidiaries are Delco, Hyatt, New Departure, Remy, Klaxon and Perlman. Mr. Sweet has offices at 33 West 42nd St., New York City. He will have the management of the corporation under the direction of the president and board of directors.

New Incorporations

Armored Motor Car Co., Detroit, Mich., has been incorporated with \$100,000 capital for the purpose of manufacturing and selling armored motor cars and devices accessory to them.

Visible Measure Gasoline Dispenser Co., Louisville, Ky., has been incorporated by J. Henry Brady, Wm. A. Earl and Wm. A. Pell with a capital of \$40,000, to manufacture a gasoline vending apparatus with force pump and transparent measuring chamber.

Rochester Ball Bearing Co., 203 State St., Rochester, N. Y., has been incorporated with capital stock of \$5,000, and will specialize in the manufacture of steel balls and ball thrust bearings.

Collier Motor Truck Co., Painsville, O., has reorganized and will establish a plant in the building formerly occupied by the Vulcan Co. to manufacture a light commercial car. M. E. Crow is president and W. A. Collier and John Crain are also identified with the company.

Kelsey Wheel Co., Detroit, Mich., manufacturers of automobile wheels and rims, has been reorganized with \$3,000,000 of 7 per cent. preferred stock and \$10,000,000 of common. Net earnings of the business last year were \$794,134 and for the first six months of this year \$590,525.

Spicer Mfg. Co., South Plainfield, N. J., has been reorganized with a capital of \$7,000,000. No change in the ownership or management will be made. C. A. Dana, for the past three years president of the old company, will remain as president of the new one, and C. M. Spicer will continue as vice-president.

New Truck Agencies

David Stahler, 2d St., Portsmouth, O., has taken the agency for the Stewart light truck.

Andrew Redmond, 3d & Boyd Sts., Harrisburg, Pa., has taken the agency for the Vim truck.

Wm. A. Zaetsch, 1004 Atwater St., Saginaw, Mich., has taken the agency for the Menominee truck.

Hartford Buick Co., Hartford, Conn., has taken the agency for the White pleasure and commercial cars.

Grace Motor Car Co., Marengo Ave., Pasadena, Cal., has taken the agency for the Stewart commercial car.

Mahoning Motor Co., Henry St., Youngstown, O., has taken the agency for Independent trucks in eastern Ohio.

D. W. Shipman, who recently opened a garage at Sullivan, Ill., has taken the agency for the Waterloo Farm Tractor as well as the Cole cars.

Crown Motors Corporation, distributors of the Kissel worm drive motor truck, has located on the fourth floor of the building at 140-42 W. 42nd St., New York City.

Gardner Garage opened garage and service station at 115 S. Weadock Ave., Saginaw, Mich., where they will act as selling agents for the Republic commercial car.

Truckford Sales Corp. of New York, New York City, has been incorporated to handle commercial cars, etc., by R. Metzler & A. E. Hoffman, 1765 Broadway, New York City. Capital \$10,000.

Lawrence Motor Co., Pittsburgh, Pa., has opened a branch at 165-67 N. 4th St., Columbus, Ohio, where it will sell Republic and Vim commercial cars, for which it has the agency in Ohio.

Stedfeld Motor Sales Co., 338 N. Capitol Ave., Indianapolis, Ind., has been organized to handle the distribution of the Stewart delivery trucks for central Indiana. H. L. Stedfeld will have charge of the management of the concern.

Van Deusen-Stephens Motor Co. has opened with headquarters at 409-11 Virginia Ave., Joplin, Mo., as distributor for the Smith Form-a-Truck in 35 counties of southwest Missouri and southeastern Kansas. It will also handle large commercial cars and Columbia steel trucks. Branch offices will be maintained at Parsons, Fort Scott, Springfield and Pittsburgh.

A. C. F. Keleher has purchased a half interest in the Pierce-Arrow agency in Pittsburgh, and is now associated with Herman H. May under the name of May-Keleher Co. As a member of the Foss-Hughes Co., in Philadelphia, Mr. Keleher has been responsible for the sale of a large number of trucks. The present quarters at Center & Negley Sts. will be maintained, and Messrs. May & Keleher will continue the business on the high plane of Pierce-Arrow service.

Factory News

Autocar Co., Ardmore, Pa., is erecting a one-story shop building, 80 x 100 ft.

Teetor-Hartley Motor Co., Hagerstown, Ind., is erecting 2-story addition 32 x 135 ft. at a cost of \$22,000.

Field Motor Co., Grand Rapids, Mich., has completed negotiations for the erection of a plant for the manufacture of a new process gasoline and kerosene engine.

James Cunningham, Son & Co., Rochester, N. Y., manufacturer of auto ambulances, has doubled its foundry capacity and has erected a four-story addition to take care of the increased business.

Bound Brook Oil-less Bearing Co., Bound Brook, N. J., is erecting reinforced concrete building 50 x 100 ft. to take care of the rapidly growing business in its Nigrum Impregnated Wood Bearing department.

Commerce Motor Car Co., Detroit, has increased its capital stock from \$200,000 to \$400,000. A new 1-ton truck is being brought out, the price of which for the chassis and seat will be \$1175. An addition 250 x 60 ft. is being made to the plant.

Republic Motor Truck Co. reports for six months ending June 30th, the sale of 2,789 trucks with sales value of \$2,774,761 as compared to 1,855 trucks valued at \$1,778,007 during the entire calendar year of 1915. For the year ended June 30th, net profits were \$530,593 as compared with \$102,830 in 1915 and \$12,321 in 1914.

Bosch Magneto Co., New York City, has recently closed contracts with the following truck companies to use Bosch magnetos for the coming season: American Motor Truck Co., Hartford, Conn.; Rowe Motor Mfg. Co., E. Downingtown, Pa.; Tiffin Wagon Co., Tiffin, O.; W. H. Gabriel Carriage & Wagon Co., Cleveland, O.; H. E. Wilcox Motor Co., Minneapolis, Minn.

Goodyear Tire & Rubber Co., Akron, O., has reduced the number of its dealers about 66 per cent., and those that remain will be required to be of a high grade from a business standpoint. All price lists were withdrawn on October 1st. Dealers under the new system must have service stations; they must carry an adequate stock of tires, tubes and accessories, and must be in a position to give good service to the public.

Peerless Motor Car Co., Cleveland, O., will place a contract soon for the erection of three buildings for the manufacture of pleasure cars, allowing its present plant to be devoted exclusively to the manufacture of commercial cars. The plans provide for a 3-story reinforced concrete building, 60 x 270 ft., a 3-story building, 53 x 161 ft. for body making and chassis assembling, and a 1-story building of the saw tooth type to be used for final assembling.

St. Louis Convention of the National Association of Automobile Accessory Jobbers Largely Attended

Important Trade Resolutions Passed, Dealing With Piracy, Trade Discounts, Bankrupt Stocks, Rebates, Etc.



THE Planters' Hotel of St. Louis was the scene of much activity the 4th, 5th and 6th of October. A most representative gathering of not only the accessory jobbers of the country, but of many manufacturers of accessories, was in attendance at the Convention.

The spirit of the convention was one of harmony and co-operation; the advantages to be gained by unity of purpose were voiced by many of the speakers. There is every indication that this organization which is now but eighteen months old will be the dominating factor in the accessory trade of the country. The live and let live policy and fair dealing were advocated not only by commissioner William M. Webster, but by those who spoke from the floor.

The attendance was the largest of any meeting yet held by the Jobbers' Association and contrary to most conventions, these sessions were begun exactly on time. The five dollar refund provided for in the constitution to those delegates present at each session has worked most successfully toward prompt and full attendance, and might well be emulated by other trade associations.

The work of the convention centered around the resolutions presented to the body by the resolution committee. These resolutions embody the thought in concrete form of the members of the Jobbers' Association.

Business was not the only consideration, as a very pleasant time was enjoyed by all, particularly the ladies of the party, who were well entertained by the committee appointed for that purpose. A most enjoyable evening was spent at the Sun Set Inn, to which the members and guests to the number of four hundred and seventeen were conveyed by motors. At this unique resort a beautiful sunset was witnessed over the Meramec Valley, a banquet was served and those present were entertained by speeches from delegates representing companies scattered from the Atlantic to the Pacific, not to mention the silver-tongue orator, Mr. Low, whose flow of speech was unique.

First Business Session

On Wednesday morning the first session was held, President S. B. Dean, of Minnesota, in the chair, and Commissioner Webster wielding the gavel. Incidentally it may be said that he is some wielder and it now looks as though a new gavel will have to be presented him at each meeting. President Dean made a short address, reviewing briefly the founding and growth of the or-

ganization. The commissioner then urged all present who objected to any regulations, rules or resolutions which might be presented, to get up and state their side of the question and if they believe these measures to be not in accord with the best interests of the association to talk against them and vote them down.

New Firms Elected to Membership

The following firms were at this session voted into membership:

Associate Members

Asbestos Rubber Works of New Jersey, Camden, N. J.
Ashland Mfg. Co., Ashland, Ohio.
Bergwald Mfg. Co., New York, N. Y.
Crew-Levick Co., Philadelphia.
Columbus Varnish Co., Columbus, Ohio.
Carter Carburetor Co., St. Louis, Mo.
Crum-Wiley Co., Peru, Ind.

White Star Refining Co., Detroit, Mich.
Wolverine Lubricants Co., New York, N. Y.
Whitehouse LeCompte Co., Newark, N. J.
Wonder Mist Co., Boston, Mass.
L. P. Halladay Co., Streator, Ill.
Shurnuff Mfg. Co., St. Louis, Mo.
Gates Mfg. Co., Indianapolis, Ind.
Brunswick-Balke-Collender Co., Chicago.
Lockwood Ash Motor Co., Jackson, Mich.
American Electrical Co., Chicago.
W. A. Plummer Mfg. Co., San Francisco.
John O. Heinze, Springfield, Ohio.
Nu-Back Mfg. Co., St. Louis.

Jobbers

Cameron & Barkley Co., Charleston, S. C.
Farmer Auto Supply Co., St. Joseph, Mo.
W. J. Holliday & Co., Indianapolis, Ind.
Justus & Parker Co., Columbus, Ohio.
The Korsmeyer Co., Lincoln, Nebr.
Toledo Tire & Supply Co., Toledo, Ohio.
Southwick Auto Supply Co., Topeka, Kans.



Sunset Inn, Where the Jobbers Satisfied the "Inner Man"

E. A. Laboratories, Inc., New York.
General Asbestos & Rubber Works, Charleston, S. C.
Livingston Radiator & Mfg. Co., New York, N. Y.
Marvel Accessories Mfg. Co., Cleveland, O.
New York and New Jersey Lubricant Co., New York, N. Y.
Niagara Fabric Mfg. Co., New York, N. Y.
Packard Electrical Co., Warren, Ohio.
Piston Ring Co., Muskegon, Mich.
Splitdorf Electrical Co., Newark, N. J.
Schlesinger-Redburn Corp., New York, N. Y.
Van Cleef Bros., Chicago, Ill.

B. K. Sweeny Electrical Co., Denver, Colo.
Western Motor Supply Co., Milwaukee.
The resignation of the V-Ray Co. was accepted.

The minutes of the Hot Springs meeting having been printed and distributed, their reading was dispensed with.

The Commissioner's Report

The various matters to be taken up by the meeting were presented in the commissioner's report, which was read by his secretary. These subjects were then taken up in the order of their reading and many of them were made the texts of resolutions

by the resolutions committee, which met in the evening. The resolutions which were passed follow herewith:

RESOLUTIONS

Bankrupt Stocks

The disposition of a bankrupt stock is fully covered by the existing bankruptcy laws. In the matter of stocks offered for liquidation,

BE IT RESOLVED that this association recommend to the manufacturer that whenever a considerable quantity of said manufacturer's product is offered for sale at below prevailing market prices for such merchandise, for the purpose of closing out or liquidating a stock, that the manufacturer offer to purchase said merchandise of his manufacture as it is offered if it is in salable condition, to avoid having thrown upon the market a quantity of such goods and demoralizing trade conditions.

Supplying Catalogs to Dealers

WHEREAS it appears that certain jobbers have supplied retail dealers and others with their catalogs and

WHEREAS this practice tends to create in the mind of the dealer the idea that he is thereby nominated a jobber and entitled to jobbers' prices from various manufacturers and other jobbers, even though his business is a retail proposition, and

WHEREAS this practice, by reason of the fact that it is frequently carried on in localities outside the logical trade territory of the jobber furnishing the catalog, tends to work a hardship on the local jobbers and is manifestly unfair competition, and

WHEREAS such unfair and unbusinesslike methods are contrary to the spirit of our organization,

THEREFORE BE IT RESOLVED that this organization discourage and discountenance this practice and condemn in the strongest possible terms the furnishing of such catalogs and quoting of special discounts by jobbers to dealers who have furnished such catalogs.

Trade Directories

WHEREAS certain publishing concerns have issued lists of alleged jobbers of automobile accessories which are so inaccurate that in some cases it has been found that some of the firms shown are not in existence and

WHEREAS a large percentage of the names given are those of service stations or dealers and in one instance a restaurant keeper was indicated as a jobber, therefore

BE IT RESOLVED that we offer to such publications a source of correct information and refer them to our commissioner and

BE IT FURTHER RESOLVED that we ask our membership, both associate and regular, to use their influence with such publications, to have their published lists made correct.

Payment of Bills

WHEREAS the habit of some jobbers of not adhering strictly to terms of sale works hardship upon the manufacturer, therefore

BE IT RESOLVED that the buyer adhere strictly to the purchase terms, whether these terms include a cash discount or are net. However, we recommend that manufacturers arrange their schedule of prices on a basis to permit of a discount for cash in ten days or on the 10th prox. of not less than 2 per cent.

Auxiliary Associations

WHEREAS we recognize the beneficent influence of local association work and auxiliary associations to our parent body, therefore

BE IT RESOLVED that we encourage the formation of such auxiliaries with the recommendation that they file with the commissioner's office a list of their officers and

members, together with a copy of the minutes of their meetings, which will enable our commissioner to advise and guide them in their deliberations and use such information for the benefit of auxiliaries located in other sections.

Supplying Car Manufacturers

WHEREAS there seems to be an inclination on the part of some car manufacturers to buy certain accessories beyond the amount of their actual requirements for manufacturing purposes and

WHEREAS these are disposed of to their agents at ruinous prices

BE IT RESOLVED that we commend the attitude of accessory manufacturers in limiting their contracts with such car manufacturers to the goods actually used in construction of their cars.

Guaranty

WHEREAS the practice indulged in by some manufacturers of covering their goods with an unreasonable guaranty is detrimental to the trade and a nuisance and expense to the jobber

BE IT RESOLVED that we condemn such practices and more especially the practice of a ten or thirty day trial on any article of merchandise offered for sale.

Direct Shipments

We deem it not unreasonable that a manufacturer expect the jobber to carry sufficient stock of his product to supply demands in his territory, but we believe that the question of making direct shipments to the customers of the jobber is a matter which should be left to the discretion of the manufacturer himself.

Bonus to Salesmen of the Jobber

WHEREAS jobbers of automobile accessories who are members of this association have their own stock to merchandise, and

WHEREAS it is the custom of some manufacturers to periodically offer prizes for various competitive sales of their merchandise, distribution of advertising, etc., and

WHEREAS this custom is felt to be detrimental to the jobber in the proper merchandising of the jobber's stock and the cause of demoralization of the sales force due to dissatisfaction created by the refusal to permit their participation, and

WHEREAS it is felt to be to the best interest of all jobbers that they compensate their own sales forces in whatever manner they see fit, therefore

BE IT RESOLVED that the National Association of Automobile Accessory jobbers are unalterably opposed to any sales plan inaugurated by any manufacturer that shall include any payment to the salesman of a jobber for work done or any prizes to be awarded in competitions which might result in special attention being given to any line to the exclusion of competing lines.

Manufacturers Asking Jobbers to Keep Special Records of Sales

WHEREAS there seems to be a growing inclination upon the part of manufacturers to request that special records of sales of their commodities be kept by the jobbers, and

WHEREAS this has a tendency to increase the cost of doing business, and

WHEREAS the record of sales made by the jobber is not rightly the property of the manufacturer, therefore

BE IT RESOLVED that it is the sense of this meeting that this practice be discouraged.

Returned Goods

We reaffirm the position as per a previous resolution that a service charge of not less than 10 per cent. shall be made on returned

goods and we recommend that all members use a sticker or other form of notification on their invoices, advising the purchaser of such policy.

The Commissioner spoke in glowing terms of the work of the Credit Bureau, which he said in 90 days had successfully collected 690 accounts for the members. A statement of the financial condition was also made showing that the total assets at the present time are \$17,388.22 and the cash on hand September 1st, \$9,344.77, showing that the Association is progressing in the important matter of finances.

Three Meetings Yearly Determined Upon

The suggestion of the Board of Directors that in the future the Association hold but three meetings a year, in January, May and September, and that the winter meeting be held either at Chicago or New York and preferably during the time of the automobile shows, was concurred in and passed.

The subject of compiling a tire jobbers' list was then discussed at some length. There seemed to be considerable doubt in the minds of the delegates as to just what a tire jobber might be. It was agreed that it was not right to allow a jobbers' discount on accessories or tools to those handling tires and who do not carry a complete line of accessories and tools, merely on the strength of their being jobbers of tires. It was proposed that the manufacturers' division prepare such a list. However, after consideration of this matter by this division they subsequently reported that they did not deem it advisable or expedient to try and compile such a list.

New Committees

Under new committees members were appointed as follows:

Press Committee

S. B. Dean, Minnesota.
P. H. Lyon, California.
C. A. Paine, Rhode Island.

Credential Committee

W. H. Niekamp, Mississippi.
C. R. Swishelm, New York.

Resolutions Committee

R. R. Englehart, of Iowa.
M. D. Campbell, of Ohio.
C. C. Hilliss.
S. A. Fulton, of Wisconsin.
R. B. Benton, of Virginia.
G. M. MacWilliams, of Canada.
C. E. Scott, of Texas.
C. E. Jackson.
G. T. Briggs, of Indiana.
C. A. Wigmore, of Pennsylvania.

The membership committee, owing to the increased size of the organization, was enlarged from seven to eleven. This committee is representative of all parts of the country and now consists of the following:

Enlarged Membership Committee

Fred Campbell, Mississippi, Chairman.
H. H. Bailey, Georgia.
A. J. Hopkins.
S. T. McCollum, Colorado.
E. Grossman, New York.
C. A. Paine, Rhode Island.
S. F. Beech.
S. A. Fulton, Wisconsin.
C. F. Wright, Oregon.
F. E. Scott, Texas.
G. T. Briggs, Ind.

Bankrupt Stocks to be Bought by Makers

It has been found by the members that some of the car manufacturers have purchased in certain instances more accessories than required for their output. The output in some instances perhaps being curtailed, resulting in the placing on the market of these accessories at cut prices very damaging to the trade. The suggestion was made and incorporated in a resolution that these parts should be repurchased by their makers rather than allow them to be thrown on the market at low prices, thus demoralizing the trade. A request was made by the Commissioner that all of the members who were willing to buy up such stocks to notify the Commissioner in writing.

Evils of Jobbers Supplying Their Catalogues to Dealers

The subject of supplying catalogues to dealers and allowing them to place their names on these catalogues brought out the fact that some of the members of the association had been doing this. The practice was denounced by many speakers from the floor on the basis that dealers used such catalogues to coerce manufacturers into the belief that they were jobbers and by this means obtained jobbers' prices. The matter was turned over to resolutions committee and the resolution as printed elsewhere in this article against this practice was adopted.

Just before the adjournment of this session a rising vote expressing the good wishes of the members was tendered H. R. Williams, as it was his birthday.

Wednesday Afternoon Session

The afternoon meeting was called promptly at 2.15, those in attendance being favored by hearing an address by Charles Nagel, ex-Secretary of the Interior. His subject, "Business Co-operation," developed a most interesting talk on efficiency due to business co-operation, and what can be accomplished by working together. He was most eloquent and struck a note of patriotism. A rising vote of thanks was tendered him.

The meeting next had the pleasure of hearing H. G. Wilson, traffic commissioner of the Toledo Commerce Club on traffic and transportation. His talk dealt largely with the various classifications under which automobile accessories may be shipped, pointing out the advantages of properly classifying goods and showing how money can be saved. He was also tendered a rising vote of thanks.

The business session was then continued, and the following subjects referred to the resolutions committee:—trade directories, new enterprises, discounting bills, new auxiliary associations, patent suits, co-operation on the part of the members of the association in giving information to each other, as to the reliability and standing of firms in their respective territories, also the question of selling more accessories to car manufacturers than required for their actual output.

Thursday Session

Immediately following the roll call the members were addressed by H. T. Thorp, president of the National Retail Auto-

mobile Trade Association. He talked on co-operation of all interests of the automobile business. He defined their definition of a class A garage and pointed out that they are improving the standard of garages throughout the country, as well as that of the small dealer. He told of their efforts to introduce cost accounting systems and better business methods and said that every day they worked they were producing better accounts for the Jobbers' Association. He closed by stating that his Association desired to co-operate in every way and invited the jobbers to attend their meetings.

Reducing the Margin of Profit

The question as to the right of the manufacturer to reduce the differential or margin of profit to the jobber without taking this up in any way with him, was discussed at length, the consensus of opinion being that this was not fair to the jobbers. It was believed that protest should be made whenever the margin should be reduced below 20 per cent. on articles which sell in small units at say not over two dollars, and that a sliding scale increasing on the very low priced units should be advocated. Mr. Low made a strong plea that jobbers maintain a retail price in order that the manufacturer may not use the argument that there is no use in giving the jobber more as he does not keep it.

The Commissioner requested manufacturers who have complained of jobbers who encourage piracy to send in the names of any such to him so that these jobbers may be brought before the ways and means committee. The practice of certain jobbers practically forcing or coercing the manufacturer into daily newspaper advertising in their section was condemned and specific instances were cited of cases of this kind.

Amendments to the Constitution. President Not Eligible for Re-election

The constitution was amended in several respects: Article 4 was so amended that the president is not eligible to succeed himself as the association believes in rotation of office. It also makes the retiring president, for one year succeeding his term, a member of the advisory board.

Section 10 of Article I was amended to read that the meetings of the Association shall be held in January, May and September at the call of the president, subject to the approval of the members as to the exact time and place.

Article 20, section 3 was made to read that the members of the Board of Directors be allowed certain attendance fees as provided for in section 2; this was to at least partly care for the extra expense to which members are put in order to fulfill their duties.

Report of Committee on Assisting Trade

Mr. Campbell, of St. Louis, then reported for his committee to the effect that they recommended to the Association an appropriation of one thousand dollars be provided for the purpose of starting in the trade papers an educational campaign to assist dealers and garage men and especially to make known the helpful attitude of the

jobbers toward the dealers and garage men. Mr. Faeth believed although the idea was a good one, the committee had not definitely enough worked out its plans. Mr. Norris objected that a thousand dollars was not sufficient. Mr. McDonald favored it on the grounds that it was enough to start with. At a subsequent meeting the appropriation was granted. It was suggested that cases of bad management which would point a moral be forwarded to a special committee of manufacturers' division and these to be put into leaflet form and distributed to members to be mailed out with their letters, in order to help the recipient dealer or garage man. Mr. Campbell resigned as chairman of the committee on assisting the trade, and Mr. Roberts, of Toledo, was appointed to fill the vacancy.

Report on Standardization

This brought out several matters of interest, the suggestion being made that higher prices be placed on less than unit lots, that no prices be printed on or about the box and that different standard colored labels be used on goods of different grades.

Various resolutions such as that on bankrupt stocks, supplying catalogues to dealers, jobbers' lists by trade papers, auxiliary association, charge on return goods, etc., were discussed. The resolutions which were passed on these subjects will be found in the paragraphs on resolutions.

In the afternoon session the definition of a jobber was gone over, and it was finally left by a committee appointed for its consideration as it now stands and is substantially that a jobber of automobile accessories is one who buys in bulk or quantity for resale to the dealer or garage; who carries sufficient stock at all times to meet trade requirements; who travels salesmen, issues a catalogue and conducts his business along such ethical lines as are recognized by the trade.

Mr. Faeth said that what we wanted was to define who is eligible to membership, and to vote at the next convention. The subject was also discussed by Messrs. Low, Beech and Bailey.

The matter on discounts or rebates to be given at the end of the year according to quantity of goods purchased was disapproved of by various speakers and was referred to the resolutions committee.

A representative of the Cincinnati Chamber of Commerce then spoke briefly, inviting the Association to hold its next May or September meeting at that point.

The resolution on business promotion or the formation of state associations was passed.

In connection with standardization, Mr. Bailey said that no definite co-operative effort had ever been expended, in trying to standardize packages and that the jobber too often has to repack much of the goods he sends to dealers. Mr. Bailey was placed on the standardization committee and that committee instructed to confer with the manufacturers' division. The meeting adjourned at 3 o'clock for the trip to Sun Set Inn.

The Friday Morning Session

At this meeting, which was well attended, Mr. Faeth reported that the committee

were willing to let stand the definition of a jobber. The committee was continued, however. The following resolutions as presented by the resolutions committee were passed:—bankrupt stocks, catalogues to dealers, trade directories, payment of bills, auxiliary associations, returned goods, guarantees, direct shipment of goods, special premiums, manufacturers asking jobbers to keep record of sales, etc.

The resolution on patent suits brought out considerable discussion, some objecting to the associations taking the responsibility of fighting patents. It was finally voted to reconsider it and it was handed back again to the resolutions committee.

On the subject of returned goods and the charge on same after considerable discussion it was decided to call the roll to ascertain just which companies were or were not using a sticker or printing the charge on their bill heads, and this was done.

The Commissioner then ordered all to use the stickers and called attention to the effect on the mind of the purchaser when practically all of the jobbers with whom he deals use similar stickers.

The resolution on Guarantees, Direct Shipments, Special Premiums and request of manufacturers that jobbers keep records of sales, etc., were passed.

Under communications the Commissioner read telegrams from Richmond, Va., and Detroit, inviting the Association to hold its 1917 meeting there. The Detroit contingent wore badges during the meeting suggesting a summer cruise there in 1917 and showed lantern pictures of Detroit and its advantages as a convention place.

The question of what is a dealer was turned over to the Trade Relations Committee. The practice of new manufacturers insisting on jobbers buying in lots of 50

or more at a time was suggested as a topic for discussion. Another letter brought up the practice of some manufacturers selling goods directly to agents through special detail salesmen and not through the jobber. The consensus of the meeting was that such sales should be made through the jobber, as otherwise the maker often sold to firms to whom the jobber would not sell and this would leave the firm with no way of continuing the line.

Mr. Norris was asked to talk about the Arcadian Highway, the promoters of which desired the Association to purchase \$200 worth of bonds. It was the sense of the meeting which went on record that it would not buy any such bonds, but let individual members, near whom the highways from Detroit to New Orleans might run, invest if they desired.

President Dean talked on the time of the winter meeting and by vote it was decided to hold it the 24th, 25th and 26th of January, just before the opening of the Chicago Automobile Show.

Special standing votes of appreciation were given to Commissioner Webster and by the ladies to Mr. Campbell and Mr. and Mrs. De Kamp. A special resolution of

appreciation was passed by standing vote for the St. Louis members and the McQuay-Norris Co., who made the convention the most successful yet held by the Jobbers' Association.

Several souvenirs were presented the delegates, among them being a knife by Curtis Pneumatic Machinery Co., of St. Louis, a book of statistics by Van Cleef Bros., Chicago, Ill., etc.

EXPORTS OF AUTOMOBILES, PARTS, TIRES AND LUBRICATING OILS

The figures given below are taken from the Monthly Summary of Foreign Commerce of the United States for June, and give one an idea of the immense number of automobiles, both pleasure and commercial, as well as kindred parts, that have been exported by this country during the past two years. The United Kingdom and its Allies have been of course the largest buyers. The big increase in the number of commercial cars exported is noticeable in comparing the figures quoted for the twelve months ending June, 1914, with June, 1916.

	Twelve Months Ending June.					
	1914		1915		1916	
	Quantity	Value	Quantity	Value	Quantity	Value
Passenger automobiles	28,306	\$25,392,963	23,880	\$21,113,953	56,231	\$40,658,833
Commercial cars	784	1,181,611	13,996	39,140,682	21,265	56,805,548
Parts of cars (not including tires)		6,624,232		7,853,183		22,536,485
Tires		3,505,267		4,963,270		17,936,227
Gasoline (gallons).....	151,611,537	21,699,475				
Lubricating and heavy paraffin oils (gallon).	196,884,696	27,852,959	156,860,666	17,603,317	100,148,554	16,297,561
Naphthas and light products of distillation (except gasoline)	40,840,730	5,653,210	214,429,099	28,499,786	250,392,768	37,451,607
			94,335,128	10,296,928	194,614,803	29,472,233

Activities of the Motor Truck Association of Philadelphia

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COMMERCIAL CAR JOURNAL OFFICIAL ORGAN

After its recess during the summer months, the Motor Truck Association again resumed activities for the fall and winter months at its first monthly meeting, Wednesday evening, September 20, at the Adelphia Hotel. More than eighty members and guests of the Association attended the meeting.

Captain Robert Lee Russell, Commandant of the Navy Yard, League Island, told the members that during the summer the Navy Yard had purchased additional trucks. He referred to the recent appropriation made by Congress for improving and extending the local Navy Yard, and he was in hopes that among the improvements would be the purchase of several motor trucks for use in the Yard. He stated they also expected to be awarded the contract for the building of two or more capital ships, either first-

class battleships or cruisers, and told of the award to the Navy Yard of the contract for building a Naval Hospital Ship.

He was followed by George M. Graham, who discussed the accomplishments of the Motor Truck Association and what its aims and objects were, and also what the Association expected to do in the future. He advised fair competition in the motor truck industry; also a campaign for good roads and streets, better street traffic regulations for motor trucks, and he urged that the owners and superintendents of deliveries should avail themselves of membership in the Motor Truck Association.

Another speaker was the attorney for the Association, A. E. I. Jackson, who in the course of his talk said that there are 200,000 motor trucks in use in the United States, which do but 3 per cent. of all the hauling, and he predicted that it would re-

quire 4,000,000 new motor trucks to displace the hauling done by horse and mule drawn vehicles in the United States, and that these 4,000,000 trucks could be sold in the United States alone within the coming five years. He stated that the end of the war in Europe would also increase instead of decrease the sale of trucks.

He was followed by E. J. Cattell, who livened up the meeting with his optimistic views.

Lee J. Eastman, president of the Motor Truck Association, presided.

The next meeting of the Association will be held on October 18th, and will be an Owners' Night, at which all owners and superintendents of deliveries of Philadelphia and vicinity will be invited to attend, and seven good speakers, who are owners of commercial cars, will address the meeting from an owner's standpoint.

The CHILTON ideal—honest circulation; results to advertisers—fully exemplified in the CCJ

Immense Quantity of Material Hauled by Trucks in Building Bridge

Machines Haul Over 62,000 Tons of Sand, 16,000 Tons of Limestone and 543,000 Sacks of Cement. Prove Extremely Valuable in Hauling Concrete Mixture



OVER 60 per cent. of the thousands of tons of materials used in the construction of Cleveland's new \$4,000,000 high level bridge, has been hauled by commercial cars. This structure is the longest double-decked three-hinged steel arch bridge in the world and when completed will connect the west side of Cleveland and its 300,000 population in direct communication with the great downtown business district. Work on this gigantic improvement was started in May, 1912, and while County Engineer Zesiger estimates that vehicles and pedestrians will be able to use the upper deck some time in November the east and west subway approaches will not be opened for trolley traffic before the latter part of 1917.

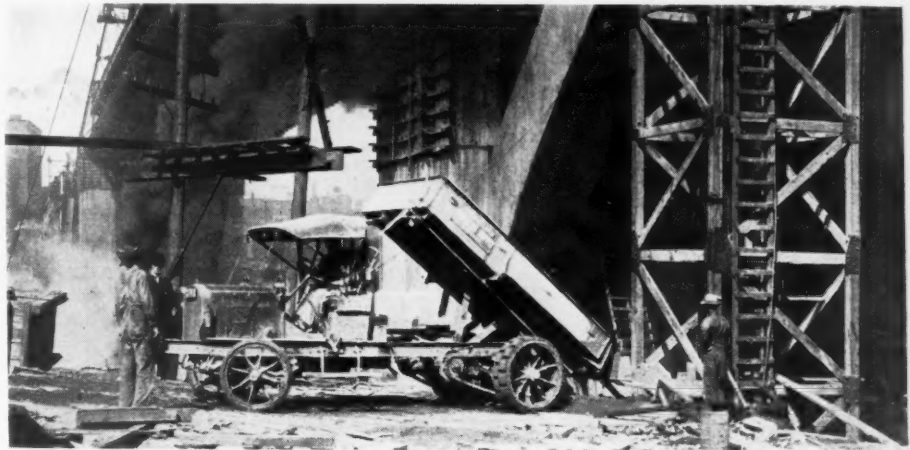
The cost of tackling this job without the use of motor trucks would have been prohibitive, engineers say, because it was estimated that in certain phases of the haulage work one truck could make four trips to a team's one, hauling 24 tons of material while a team could haul but 3. The trucks performed a double duty in hauling the concrete work. First they hauled the cement, sand, gravel, slag and limestone to the mixers and after it had been properly mixed, re-hauled the mixed concrete to the forms. The speed of the trucks was important because they offered the only means of transportation that enabled the contractors to secure the materials in sufficient quantities to keep the giant mixers busy. In hauling the mixed concrete to the forms all the units of the job had to be poured continuously and it was absolutely necessary that the handling be done expeditiously as a breakdown in the middle of the job would be very serious and entail heavy financial losses to the builders.

Engineers in charge of the improvement have praised the efficiency and dependability of the fleets of trucks at work on the bridge and Chief Engineer Harry Hilton, of the Hunkin Conkey Construction Co., which holds a \$1,028,570 contract for building the superstructure not including the steel span, the end abutments, approaches on pier No. 12, says with reference to the trucks:

"When we started work on the high level bridge we were paying an extra price to the supply houses for all concrete materials that had to be hauled from their docks

the truck has already paid for itself together with all upkeep charges. Besides this it had time to haul steel, supplies, forms, etc., and make trips to other jobs which we have in the city."

R. W. Blake, hauling contractor, used six White 5-ton power dumping trucks to haul 12,692 tons of sand, 14,758 tons of gravel and 1653 tons of limestone in addition to tons of miscellaneous material to the bridge. Blake's trucks worked 24 hours a day for over two months continuously in hauling concrete material for the building



Truck Dumping a Load of Mixed Concrete

This five-ton White truck, which is owned by the Hunkin-Conkey Construction Company, was purchased at the beginning of the job and with the work three-quarters completed has already paid for itself in addition to performing other haulage duties.

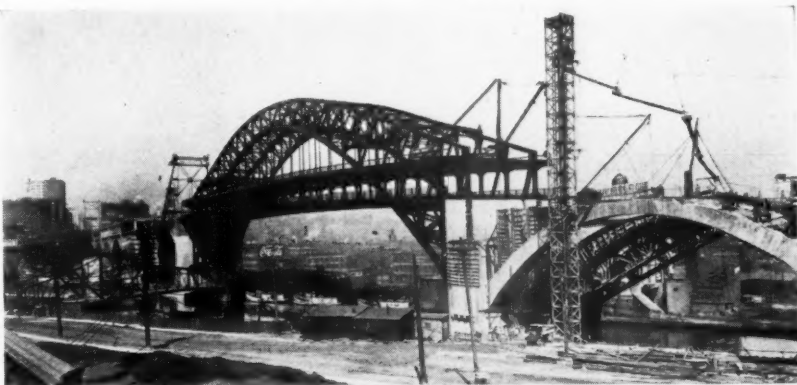
to the job. Later we figured that we could buy another truck, haul our own material, the truck paying for itself with the difference in hauling costs and we would be a truck ahead at the end of the job. The contract is now 75 per cent. completed and

of the west piers. The material was hauled over a mile course, the trucks crossing two draw bridges, a railroad and climbing the Detroit avenue hill with 12 per cent. grade. One truck made over thirty-five trips in ten hours hauling approximately 175 to 200 tons of material. Mr. Blake says that the wide bodies on the trucks made it an easy matter to load them quickly from a clam shell bucket without any overspill and that the entire load could be dumped at the mixers in less than a minute.

The Cleveland Builders' Supply Co., which owns a fleet of nine trucks, hauled approximately 400,000 sacks of cement and miscellaneous other materials to the new bridge. The trucks averaged two miles to a round trip.

Four trucks owned by the Cuyahoga Builders' Supply Co. hauled 180,000 sacks of cement to the bridge. The material was hauled from the company's warehouse three-quarters of a mile from the bridge and each truck was able to load, carry the material to the bridge, unload and return to the warehouse within a thirty-minute period.

W. A. Fay, president and general manager of the Cuyahoga Co., in speaking of



Commercial Cars, Steel, Concrete, and Engineering Skill Have Made This Bridge Possible

A view of Cleveland's new \$4,000,000 high level bridge, which spans the Cuyahoga River. This structure is the longest double-decked three-hinged arch bridge in the world, and when completed will connect the west side of Cleveland and its three hundred thousand population with the great down-town business district.

Everybody who is anybody in the truck industry reads the CCJ

the work his trucks performed in hauling material to the bridge, said as follows:

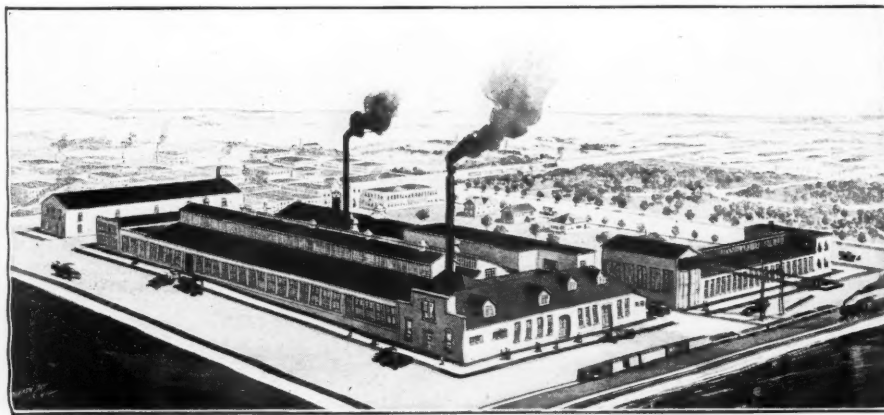
"Motor trucks have greatly speeded up this improvement. It is certain that we could not have used any other means of transportation to haul materials in sufficient quantities to keep the mixers busy and delay for want of material would have been critical."

Four power dumping trucks owned by the Cleveland Macadam Co. hauled several thousand cu. yds. of slag for one of the east piers of the bridge. The trucks made four trips an hour covering two miles to a round trip and climbing Main Street hill with a 10 per cent. grade.

County Bridge Engineer Zesiger, who designed the bridge, pays a high tribute to the efficiency and dependability of the trucks on the job and says that they have proven a most important factor in rushing the improvement to completion. "We have watched the work of the trucks with great interest and they have been very satisfactory. They have hauled enormous quantities of materials in the shortest possible time and are the only mode of transportation that could be depended upon to keep the mixers busy," he declares.

The bridge consists of twelve concrete spans and one steel span measuring in length over all 2880 ft. The steel span which crosses the Cuyahoga river 200 ft. above the water is 591 ft. in length. The contract for building the span was held by the King Bridge Co. and amounted to \$648,126. The 4100 tons of steel required for the span, together with the 3725 tons of reinforcing steel used in the piers, would make a wall 5 ft. high, $\frac{1}{2}$ a ft. thick and 30 miles long.

The width of the bridge over all is 81 ft. 6 in., 45 ft. being devoted to a roadway, 14 ft. 9 in. to the width of the sidewalks and the lower deck will accommodate six street car tracks. The upper deck will be used exclusively for pedestrians and vehicle traffic. The material used in the construction of this bridge would require a train of railroad cars over 75 miles in length to carry it and if hauled in motor trucks would require approximately a line of over 26,000 trucks.



Cadillac Auto Truck Plant Addition

This addition is to be built to care for increased business and the new three and a half ton model to be announced shortly in these columns

CADILLAC AUTO TRUCK TO BUILD ADDITION TO PLANT. NEW $3\frac{1}{2}$ - TON MODEL TO BE ANNOUNCED

The Cadillac Auto Truck Co., Cadillac, Mich., maker of the Acme 1 and 2 tonners, announces the demand for these has become so great that in order to cope with it, an addition to their present Cadillac factory, picture of which is shown, has become a necessity. This new concrete, steel and brick building will be 96 x 176 ft., and will be the first of a series of new buildings to be erected from time to time, in accordance with the development of the company's business.

This addition is also necessary in order to house the new Acme $3\frac{1}{2}$ -tonner which will be put on the market January 1. Repeated requests for an Acme of this size built along the same lines of the Acme 1 and 2-tonners have made it necessary for the company to make this heavier truck. It will be an Acme through and through. Its general appearance and design will be almost identical with that of the Acme 2-tonner. The same units, the same well-known style of assembly, which have brought the Acme, "The Truck of Proved Units" to the forefront, will be used.

S. A. E. COUNCIL CONSUMMATES PLANS FOR ENLARGED SCOPE OF THE SOCIETY

At the recent Council meeting of the Society of Automobile Engineers, held at New York City at the Engineering Societies Building, 39th Street, the Council passed the following resolution in regard to the enlarged scope of the Society. There is a feeling on the part of the engineers of the country that all of the work connected with the standardization of vehicles propelled by internal combustion engines should be centered in one large organization. The Government is co-operating in this matter in view of the added efficiency which will result in the movement for industrial preparedness. The Resolution is as follows:

"WHEREAS it is the sense of the Council that it is desirable in the interests of the art to center in one association the activities furthering the development and production of automotive apparatus and for that purpose to bring into one society the member-

ship of the several associations now engaged in similar and allied activities as this society, including both engineering and industrial associations, and

WHEREAS a widespread demand has been expressed by members of this Society, as well as by members of such other allied organizations and by United States governmental authorities that such amalgamation be effected, and

WHEREAS in order to effect such amalgamation it is desirable that there be remitted to members of such other allied organizations who may desire to apply for membership under the payment of the initiation fee called for by the Constitution of this Society.

THEREFORE BE IT RESOLVED that any member in good standing of any organization engaged in similar or allied activities as this Society selected by the Council of this Society, and which shall through its governing body pass a resolution recommending to its members or engineers associated with members thereof, to join this Society, shall, subject to all other provisions by the Constitution relating to the admission of members, be permitted to become a member of this Society without the payment of any initiation fee and merely upon the payment of the annual dues, provided application for such membership be made within 90 days after a date to be fixed by the President of this Society."

The Resolution applies at this time to the American Society of Aeronautic Engineers, over 40 members of which have already applied for S. A. E. membership, the Society of Tractor Engineers, the National Association of Engine and Boat Manufacturers and the National Gas Engine Association.

At the Council meeting referred to, joint session was held with members of the National Gas Engine Association's representatives and also those who have been appointed to confer with the S. A. E. Council from the aeronautic engineers. The work of amalgamating all of these interests is progressing rapidly and smoothly and it is believed to the very best interest of all engineering work.

POST-OFFICE DEPARTMENT BEING MOTORIZED IN EARNEST

The Postal Authorities have started work in earnest of motorizing the delivery equipment of the post office by government owned and government operated trucks. Two committees of three men each have been appointed. The first makes a study of the equipment of the various cities and decides which shall be motorized first and the order in which it shall be done. The recommendations of this committee are then passed on to a second committee, which decides the number and type of the truck necessary to best carry on the work. Eighteen Fords, ten $\frac{3}{4}$ -ton Whites, and three $1\frac{1}{2}$ -ton Packards have been purchased for the service in Pittsburgh; twelve Fords have been purchased for Atlantic City, and three $\frac{3}{4}$ -ton Whites for Nashville, Tenn. A garage site having 40,000 sq. ft. of space has been selected in Philadelphia, and a similar garage site in Detroit. The two committees will travel from city to city in their work of investigating the present equipment and determining the commercial cars required to replace it.

THE COMMERCIAL CAR JOURNAL

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THE TRAILER



IN this issue will be found some special articles dealing with the tractor and trailer. Since trucks have become efficient to the extent that they can be kept on the road as continuously, if not more so, than any form of wheeled conveyance, there has been a consistent effort on the part of the user to get more out of each vehicle. This demand for increased capacity has led to overloading and many of the evils connected with the use of trucks. It has also led to the design and construction of short wheelbase tractors and four-wheeled and two-wheeled trailers.

Since the first trailer was connected up with its leading vehicle, the trailer business has consistently grown, and anyone who reads the matter in these columns cannot fail to but appreciate the need for some such device. This does not mean that trailers can be used in every case with economy, but it does mean that there are innumerable lines of endeavor where trailers show a distinct economy over what can be done with trucks alone. These are the instances which we are trying to present to our readers in the hope that they may glean from our columns suggestions which they can

make to truck purchasers as to ways and means of making their motorized delivery or transport fleets more economical.

With improved roads, improved trailers and connecting mechanism, the use of the pulled load is bound to increase. We believe in the future of the trailer when properly employed, and shall therefore feature this mode of transportation in future issues.

CAN THE COMMERCIAL CAR DISPLACE THE ONE-HORSE WAGON?



IN the November issue of the Commercial Car Journal, the interesting question as to the possibility of the motor displacing the one-horse wagon is to be discussed. This is a problem which some have said the automobile engineers could not solve. The various phases of this question will be taken up in detail, and small trucks and what they are doing to displace the horse will be outlined, and specific instances cited.

To those who are watching the progress of the commercial car it is very noticeable that the light delivery vehicle is increasing enormously in popularity and in number.

If you are interested in the light delivery vehicle, don't fail to get your November copy of the Journal. If you are interested in manufacturing such a commercial car, you will find in its pages a description of the various parts and materials which are now on the market for the construction of such light trucks. If you are interested in completed vehicles, you will find within its columns descriptions of the latest in this line of manufacture.

The future of the light delivery car is enormous. No one questions it, and it behooves all those connected with the trade to look carefully to the possibilities of the small capacity unit.

PREPARING FOR THE WINTER SEASON



WITHIN another two months the holiday season will again be with us. Commercial cars will be pushed to their utmost and in some cases working twenty-four hours a day. The problem of the delivery managers of the big department stores will resolve itself into keeping the "fleets" in continuous service. Merchants all over the country are preparing for this tremendous holiday rush, which promises to be one of the greatest buying seasons ever witnessed in this country. And it is up to the merchant, whether he be an owner of only one truck or twenty, to have his machines in the best possible running order. Now is the time to have that little trouble corrected. Don't wait until the machines are needed the most.

This overhauling should be devoted not only to the power plant of the machine, but all such accessories as the anti-skid equipment, lights and easy starting arrangements should be looked into. Slippery streets mean anti-skid devices or anti-skid tire equipment. It is much cheaper to buy a new set of chains than to repair a damaged rear axle. Delivery trucks that are to be used on the suburban routes should be equipped with a storage battery and a spotlight—it may avoid a serious accident.

Last but not least the cooling system. Put in a supply of anti-freezing solutions and have them in readiness for that freezing spell.

Merit wins—that's why the CCJ is the leader

Metal and Rubber Markets

Tremendous Demand for Steel Plate

Large orders placed for steel plate by the U. S. Government besides a great demand for plates from foreign sources is furnishing a problem to the mills to adjust their schedules. Mills are overloaded with business that will demand capacity production over all of next year. Rail orders for 1918 are already being taken, thereby assuring capacity mill operations for a long time to come. Many mills are entirely sold out on shell bars, forging and other forms of steel and it is said that foreign inquiries for over 100,000 tons steel in various forms are now floating around the market. Constant receipt of such inquiries has caused mills to adopt form letters explaining their inability to accept the tonnage or even quote on it and quotations on October 5th were:

Steel Products Prices

Bessemer billets, per ton, mill....	45 00 a	....
Open hearth, per ton, mill.....	45 00 a	....
Sheet bars, per ton.....	45 00 a	....
Forging billets, per ton, mill.....	69 00 a	....

Sheets

The following prices are for 100-bundle lots and over f.o.b. mill; smaller lots are \$2 per ton higher.

Blue Annealed Sheets—	Cents per lb.
Nos. 11 and 12.....	2.95 a 3.05
Nos. 13 and 14.....	3.00 a 3.10
Nos. 15 and 16.....	3.10 a 3.20

Box Annealed Sheets, Cold Rolled—

Nos. 17 to 21.....	2.80 a 2.90
Nos. 22 and 24.....	2.85 a 2.95
Nos. 25 and 26.....	2.90 a 3.00

Galvanized Sheets of Black Sheet Gauge—

Nos. 10 and 11.....	a 3.25
No. 12.....	a 3.35
Nos. 13 and 14.....	a 3.35
Nos. 15 and 16.....	a 3.50
Nos. 17 and 21.....	a 3.65
Nos. 22 and 24.....	a 3.80

Above prices are for Bessemer stock. For open hearth stock, \$2 per ton advance is charged.

Iron and Steel at Pittsburgh

Bessemer iron, Valley furnace....	22 00 a	22 50
Bessemer steel, f.o.b. Pittsburgh....	45 00 a	....
Skelp, grooved steel.....	2 50 a	2 60
Sheared steel skelp.....	2 90 a	3 00
Skelp, grooved iron.....	2 70 a	2 80
Sheared iron skelp.....	3 00 a	3 10
Ferromanganese (80 per cent.), seaboard.....	165 00 a	....
Steel, melting scrap.....	16 75 a	17 25
Steel bars (contracts).....	2 60 a	....
Black sheets, 28-gauge.....	2 90 a	3 00
Galvanized sheets, 28-gauge.....	4 25 a	4 50
Blue annealed, 10-gauge.....	3 00 a	3 25
Tank plates, 3/4 and heavier....	3 50 a	....

Prices of New Metals

The demand for copper and brass products are very strong, with makers well sold up as a result of recent heavy bookings. The following prices are all f.o.b. mill. The high and low prices bid between the period of September 11th to October 6th are given herewith:

	High	Low
Sheet zinc.....	\$15 00	\$15 00
Sheet aluminum, 1917 contract....	40 00	40 00
Sheet aluminum, outside market, prompt shipment.....	85 00	80 00
Copper wire.....	31 00	31 00
Sheet copper, hot rolled.....	37 50	37 50
Sheet copper, cold rolled.....	38 50	38 50
High brass sheet, wire and rods	40 00	40 00
Low brass sheet, wire and rods	40 00	40 00
Bronze sheet and wire.....	40 00	40 00
Bronze rods.....	40 00	40 00
Brazed brass tubing.....	45 00	43 00
Brazed bronze tubing.....	47 00	46 00
Seamless copper tubing.....	43 50	42 00
Seamless brass tubing.....	42 50	42 00
Seamless bronze tubing.....	43 50	43 00
Full lead sheets.....	9 00	8 50
Cut lead sheets.....	9 25	8 75

Prices of Old Metals

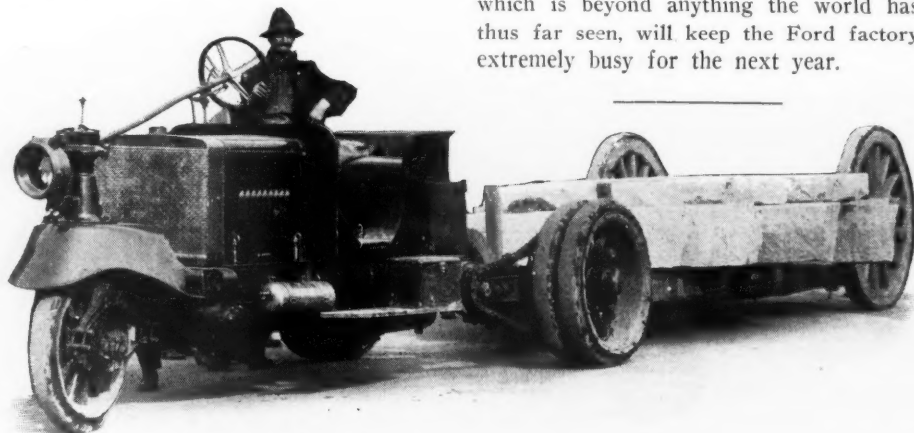
Business in copper and brass scraps has made further advances as a result of the advancement in the primary markets. Quotations on October 5th were:

Copper—	Cents per pound
Heavy cut and	Buying Selling
crucible.....	24.50 a25.00 26.00 a26.25
Heavy and wire.....	23.00 a23.50 24.75 a25.00
Light & btms.....	19.00 a19.50 20.00 a22.50
Heavy mcg. comp.....	18.00 a18.50 19.50 a20.00
Brass, heavy.....	13.00 a13.50 13.50 a13.75
Brass, light.....	10.50 a10.75 11.50 a12.00
No. 1 clean brass	
turnings.....	13.50 a14.00 14.50 a15.00
No. 1 composition	
turnings.....	15.50 a16.50 16.50 a17.50
Lead, heavy.....	6.00 a 6.12½ 6.40 a 6.62½
Tea lead.....	5.37½ a 5.50 5.75 a 5.85
Zinc scrap.....	6.25 a 6.50 7.37½ a 7.50

The buying prices are those which the larger dealers will pay; the selling prices are market quotations to consumers.

Rubber Market Quiet

Since our last report no material change in rubber prices has been noted. Manufacturers as a rule are holding off, awaiting more attractive prices. The prices given below are the highest and lowest bid during the period from September 10th to October 5th.



A Practical Trailer for Heavy Loads

A practical trailer for heavy loads is in use in San Francisco, where it carries big slabs of granite. Its advantage for this kind of material is that it is hung very low, not much more than a foot from the ground, and the blocks of stone can be rolled upon this body by means of skids and rollers, which would not be feasible if the body were as high as the average truck chassis. In hauling material to jobs where there is no crane or other lifting device, the use of a low-hung trailer solves a difficult problem. Also, in hauling any bulky object that requires considerable overhead room, this type of body allows a much higher load than the ordinary truck, without danger of brushing the trolley wires. This type of trailer is used in connection with a Knox-Martin tractor.

The CCJ is built upon the lasting foundation of honest circulation

	High	Low
Para—Up-river, fine, per lb.....	73	71
Up-river, coarse.....	45	42½
Island, fine.....	66	61
Island, coarse.....	31	29
Caucho, ball, upper.....	44½	43
Caucho, ball, lower.....	42	40
Cameta.....	32½	31
Ceylon—First latex, pale crepe..	60½	57
Brown, crepe.....	56	51
Smoked sheets.....	62½	58
Centrals—Corinto.....	..	..
Esmeralda.....	..	..
Guayule.....	32	32
Balata, sheets.....	76	73
Balata, black.....	64	64
Mexican—Scrap.....	..	..
Frontera.....	..	..
African, Massai, red.....	53	50

Domestic Scrap Rubber

Tires—Automobile.....	6	6
Bicycles, pneumatic.....	4	3¾
Inner tubes, No. 1.....	23	23
Inner tubes, No. 2.....	10	10
Red.....	10½	10½

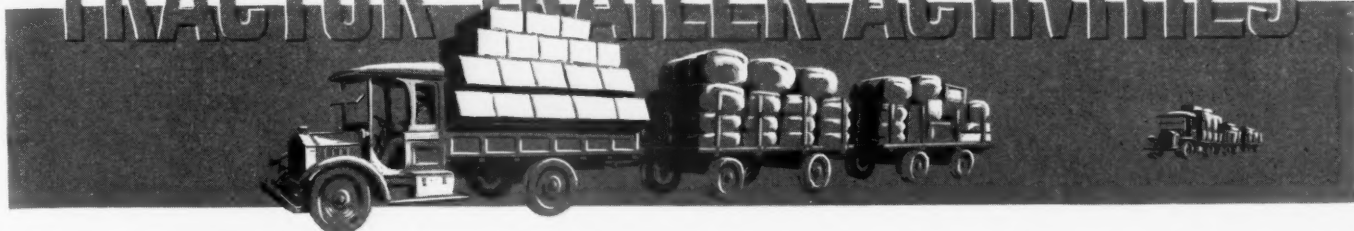
FORD TRUCK LIKELY TO BE DELAYED

In view of the statement, attributed to Henry Ford, that the Ford Co. is many thousands behind on deliveries of its pleasure cars, and that orders are being received in greater numbers each day than the daily output of the Ford factories, there is no visible prospect of catching up with orders for Ford pleasure cars.

Therefore it is quite likely that the proposed Ford truck will be delayed, as was the case with the Ford tractor.

It will be remembered that the Ford Co., some years ago, mentioned that they were working on a tractor, but shortly after that they were pushed so hard to fill orders for pleasure cars that the tractor was laid aside and has not yet made its appearance after a period of two or three years. It is reasonable to suppose that the tremendous influx of pleasure car orders, which is beyond anything the world has thus far seen, will keep the Ford factory extremely busy for the next year.

TRACTOR TRAILER ACTIVITIES



THE SHATTUCK CONVERTIBLE OUTING AND COMMERCIAL TRAILER

The Shattuck Trailer Co., of 1408-10 Hennepin Ave., Minneapolis, Minn., is manufacturing the Shattuck Convertible Outing Trailer for 1917 in improved form. As a commercial trailer it has a capacity of 1000 lbs. This trailer will have regular automobile wheels and bearings, wheels being artillery type with 30 x 3 in. pneumatic tires. Full leafed auto springs are used. It is 7½ ft. long and 44 in. wide and has 9 in. flare or seat boards extending out from the box. It takes but a few minutes to convert it either way. When the trailer is arranged for the night, the two beds accommodate two people each and partition is furnished so that two compartments can

best selected stock for the flooring and air dried stock for the box portion. It has an excellent finish and is a rich natural color.

spokes. Tires, 2 in. solid rubber, truck type. Bodies are painted green with red running gear. The carrying capacity is 1000 lbs. and the weight 550 lbs.

COLUMBIAN TRAILERS

The Columbian Wagon Co., Columbia, Pa., offers a line of trailers built for all kinds of hauling in rear of any make of car. Connections are furnished for Ford, Saxon and other makes. These connections attach direct to the frame of the car and not to the axle, thus preventing all strain on the driving mechanism. Dimensions of the body are 8 ft. long, 46½ in. wide and 16½ in. high. Body is built of oak and ash, sides and ends fit in pockets in the lower sills, which enables the manufacturer to ship them knocked down. Axles are 1¼ in. and have ball bearings. Wheels are artillery type, with 12

THE JACKSON TRAILER

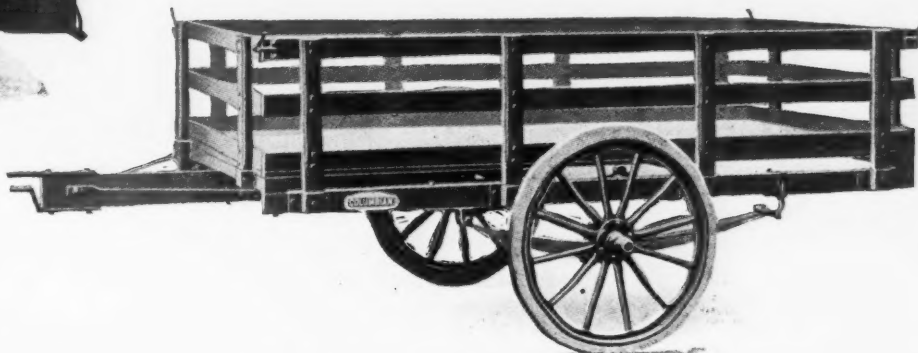
The Miles Mfg. Co., Jackson, Mich., is manufacturing a line of trailers for commercial purposes. For convenience this description will be confined to Model 33, which is a representative specimen and is illustrated herewith. This model is known as the contractors' special and embodies specifications which are typical of the Miles products. Body is described as being of the rack style, 86 in. long, 42 in. wide, 16 in. deep inside, with removable sides and ends. Painting is brewster green. Wheels are 34 in. high, have 1½ in. spokes and are equipped with extra heavy ball bearings. Tires are 1½ in. solid rubber, axle 1¼ in. special high carbon steel, 1½ in. spindle, springs 43 in. long, 1½ in. wide, 6 plate,



Shattuck Convertible Trailer

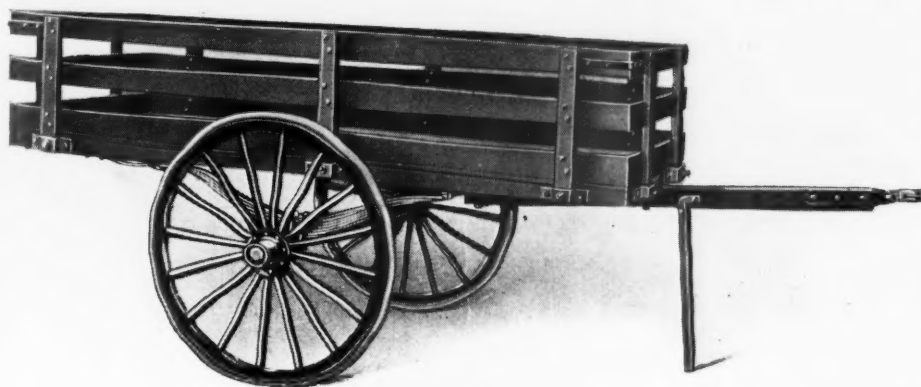
This trailer can be used as a camping trailer, or commercially. With it is included beds, table, and stove.

be had if desired. Thus four people can travel comfortably in the car and sleep when and where they desire, and have plenty of room in the car while traveling, and avoid all scratching or damaging of tonneau and upholstery with their camping goods. The box is manufactured from the



The Columbian Trailer

This illustration shows the Columbian Model No. 100-A. Ball-bearing axles, artillery type wheels and solid rubber tires are specified



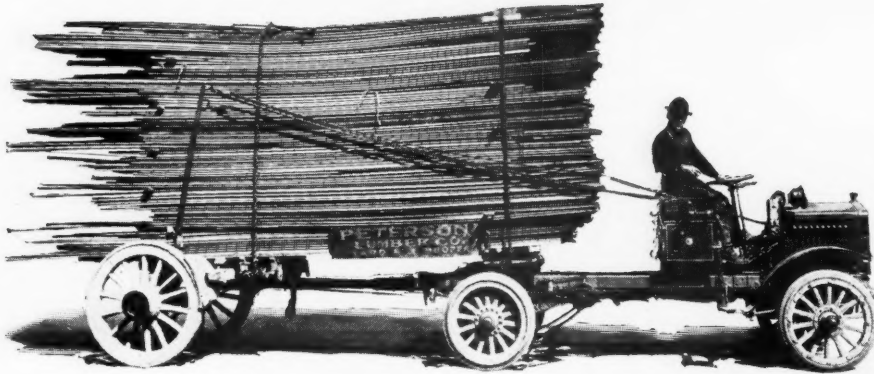
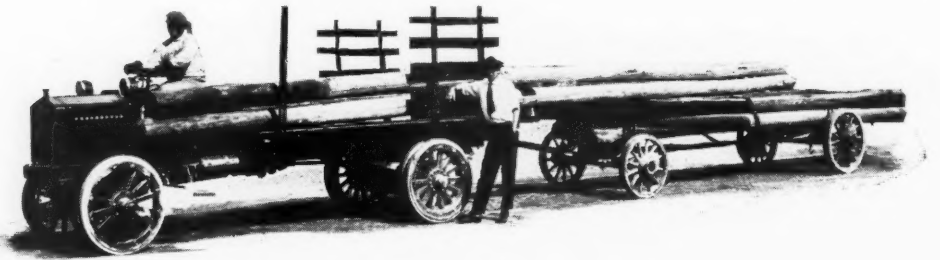
Jackson Trailer

The above cut shows the Jackson trailer assembled complete, ready for attachment to a pleasure car. The company manufactures a special attachment for Ford cars, known as the standard attachment.

with extra heavy shackles and axle clips. Draw-bar, heavy pole, reinforced with steel, adjustable to any height automobile frame. The "All-Way" coupling is a rigid universal joint, which cares for every motion between car and trailer. Even the most severe twist occasioned by the left rear wheel of the car being considerably lower than the right wheel of the trailer is taken care of in this coupling. The maker claims that the trailer can be attached or detached from the car instantly by removing one pin, no tools being necessary. Attachments: Bracket fastens to frame of car above springs, taking advantage of full spring action from the car and removing all vibration from draw-bar and trailer body. Capacity 1200 lbs. Weight, crated, ready for shipment, 375 lbs.

Make your product pay—advertise in the CCJ

THE VERSATILITY OF THE TRAILER SHOWN IN PICTURE FORM



Telephone and Lumber Companies Find Trailers Indispensable

Telephone companies have long recognized the necessity for adequate means to transport telephone poles. The view above shows how the Southwestern Telephone & Telegraph Company makes use of a Wichita Truck and four-wheel trailer. On the left is another Wichita short wheelbase truck and two trailers hauling a big load of lumber.

Trailer Carries One-third Load of Truck

Showing a five-ton White hauling heavy water pipe for the city of Lynn, Mass. The trailer, which is of the two-wheel type, carries about one-third of the complete load.



Mack Tractor in Logging Work

The illustration below shows a Mack five-ton truck and trailer, used by a Seattle logging contractor. The normal load hauled by this tractor is 4,000 ft. lumber measure, making an average load of 14 tons. In exceptional cases they have hauled 12½ tons. One-third of the load is carried on the tractor and two-thirds on the two-wheeled trailer. The logs are either 32 ft. or 40 ft. long, and measure from 2½ to 8 ft. in diameter across the larger end.



Truck and Trailer at Military Training Camp

When it was decided to send volunteers from Los Angeles to the Summer Military Training Camp at Monterey, Cal., a Republic truck and trailer was put on the job. The truck was donated for the work by D. F. Poyer Truck Company. While the trailer was of one-ton capacity, made by the Los Angeles Trailer Company. The outfit carried a total of fifteen men, including driver and baggage. The trip covered 385 miles, while the actual expenses chargeable to the truck for the trip was \$16.75. Distillate was used for fuel.



Heating Concern Makes Good Use of Trailer

The Rybolt Heating Company, of Indianapolis, Ind., finds its four-wheeled Trailmobile indispensable. It just fits the bill in this company's work, as it permits of the extra loading space for the light but bulky material.

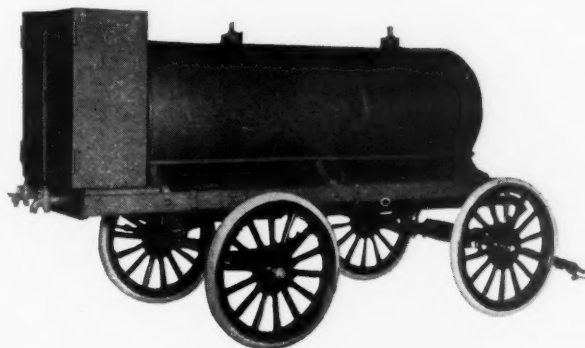
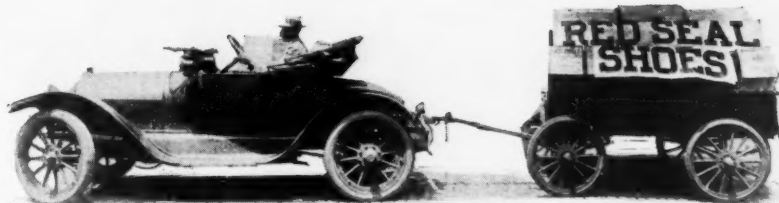


Truck and Trailer Hauling Cotton

One of the Wichita trucks and two-wheel trailers in the service of the Crescent Forwarding and Transportation Company. This company employs a fleet of these outfits.

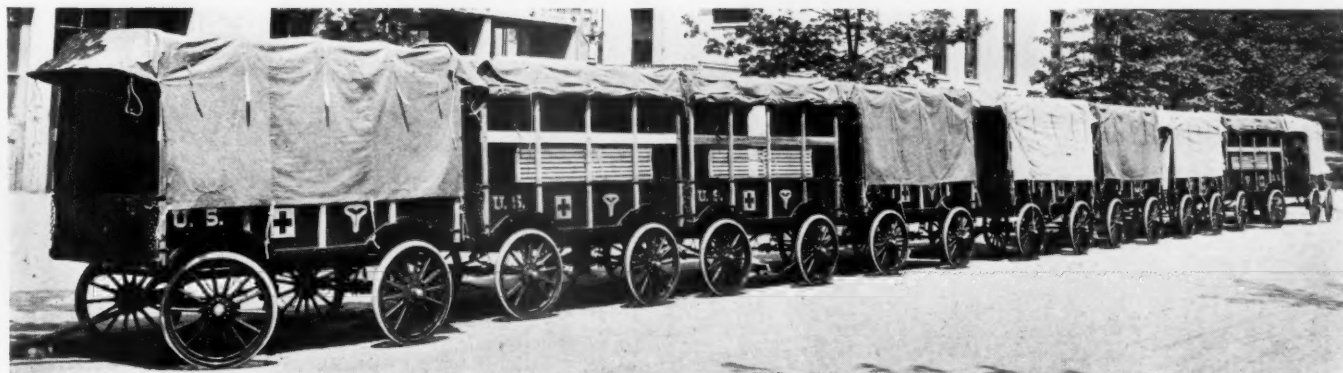
Trailmobile Tank Wagon No. 110

This tank-wagon trailer illustrated below is used for hauling gasoline and lubricating oils, and at the rear is fitted with a metal compartment for holding funnels, measures, etc. This outfit is built by Sechler & Company Cincinnati, Ohio.



Trailer Carries 1200 lbs. in 308 Mile Trip

This outfit was taken on a trip from Atlanta to Augusta to Savannah, by Mr. E. W. More, Atlanta, Georgia, Distributor of Trailmobiles, made by Sechler & Company, Cincinnati, Ohio. The weight of the Trailmobile was 750 pounds, the load 1200 pounds, making a total of 1950 pounds. The car used was a Buick 1914 Roadster that had already run 30,000 miles. The trip was 308 miles and was made in seventeen hours and thirty-five minutes, averaging 14½ miles to the gallon of gasoline.



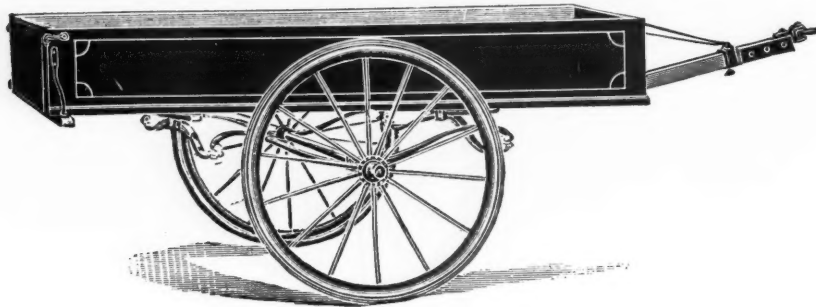
Trailmobile Ambulances built for the United States Army by Sechler & Company, of Cincinnati, Ohio

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

ONEIDA TRAILER

Oneida trailers are designed to haul general merchandise at low cost. The maker calls attention to the regular equipment of Timken axles and full platform springs. The bodies furnished come in

6 in. flareboards. Made from best grade of clear lumber. Bottom is securely fastened to floor sills. Sides are secured to frame with knee braces and box board bolts. Flareboards are attached to sides with special knee braces. Front end gate lets down onto frame. Rear end gate is adjustable.



The Oneida Trailer

Above is shown the Oneida trailer as offered by the August Schubert Wagon Company, of Oneida, New York. Timken axles and full platform springs are features of this carrier.

various sizes and are all fitted with drop end boards and are painted in an attractive manner. The draw pole is arranged to be let up or down so as to keep the body always level. A special spring arrangement is provided to absorb shocks in starting and stopping; the regular attachment to the automobile is simple and quick in operation, there being a clip to fasten to the car and the Bradley quick shifting couplers for engagement therein. Oneida trailers range in price from \$65 to \$375, according to specifications. They are manufactured by the August Schubert Wagon Co., Oneida, N. Y.

LITEHAUL TRAILER

The Puffer-Hubbard Mfg. Co., Minneapolis, Minn., is offering the Litehaul Trailer in several different styles. Specifications are as follows: Frame is of angular steel, curved inwardly and reinforced into channel construction and united at forward end. The maker claims this construction lessens the motive power required to draw the trailer. All parts and attachments for holding the box or body, sill and springs in position are riveted to the frame.

Body: The wooden box or body is 3 ft. 9 in. wide, 6 ft. long, 9½ in. deep, and has

Springs are of the regular automobile type, half-elliptic, full lipped, attached the same as front springs on a car. Axles are 1¼ in. steel, fitted for plain or ball bearings. Wheels are coach pattern fitted with steel or solid rubber tires. Net weight 375 lbs., capacity 1200 lbs. The maker calls atten-



Maxfer Ton-Truck Maker and Converted Trailer

This Trailer was originally a wagon used by the ice cream maker. It often carries a five-ton load

tion to the spring buffer coupler, which is neatly and strongly housed in between the forward ends of the steel frame of the trailer. This coupling is claimed to absorb all shocks and prevent injury to the car. Prices for the Litehaul Trailer range from \$55 to \$80, according to specifications.

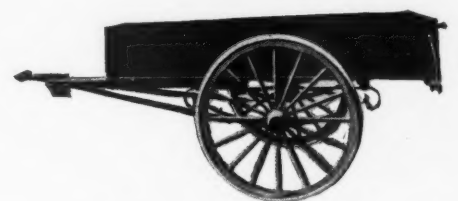
touch the bearings of the machine and cut them to pieces.

This idea should open up a new field of prospects for the maker's units for Fords, inasmuch as the trailer idea would be practical for coal, lumber, ice, oil and various lines of business. The illustration shown herewith was taken when this truck and trailer was under a four and one-half ton load. The distribution of weight makes the Maxfer Ton-Truck-Maker carry between one to two tons.



The Litehaul Trailer

Showing one of the many commodities transported by the trailer. Strength, utility and efficiency are claimed for this carrier



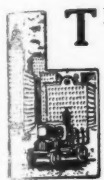
Curtis Commercial Trailer

This trailer is designed to be attached to the rear of any car and is for commercial use of any kind. It is known as the Model B; price, \$65. It has hitch which is adjustable to any car. Made by the Curtis Trailer Company, 1411 Hennepin Avenue, Minneapolis, Minn.

Advertising appropriations bring greatest returns when expended in the CCJ

Trailers Used Extensively in Lumbering in the Northwest

By WARREN EUGENE CRANE



TRAILERS are being operated in the Northwest in the logging and shingle industry, as well as in wheat farming on the immense tracts surrounding Spokane, because of the extremely large loads that are necessarily carried in conducting the work. It has been demonstrated that the possibility of injury to the car or truck by using a trailer is very slight; that loads as high as 18 tons in weight can be carried on a 5-ton truck by employing them, and that they have been operated with as low as a gallon and a half of extra gasoline during the day.

There is probably not a commercial car in the State of Washington that is operated under the unusual conditions of the G. M. C. truck owned by the Cashmere Lumber Co. The mill of the firm is located at an altitude of 3000 ft. above their yards, on the Great Northern Railway, at Cashmere, Wash., and the road connecting the two measures just six miles in length. Inasmuch as the lumber is all moved from the mill to the yards, the haul is all down grade, a considerable part of the road having a gradient running as high as 25 per cent.

Trailers of sufficient size are provided to carry several times the capacity of the truck. A problem confronting the company was to get the trailer back to the high elevation of the mill. This question was a very puzzling one, because of the fact that the empty truck on the return trip was so light that it did not provide traction for the rear wheels on the unusually heavy grade. Therefore, it was impossible to pull the trailer up, notwithstanding the ability of the engine to draw the load.

To meet this contingency a power winch was attached to the power take-off of the engine, by means of which the 8-ton ca-

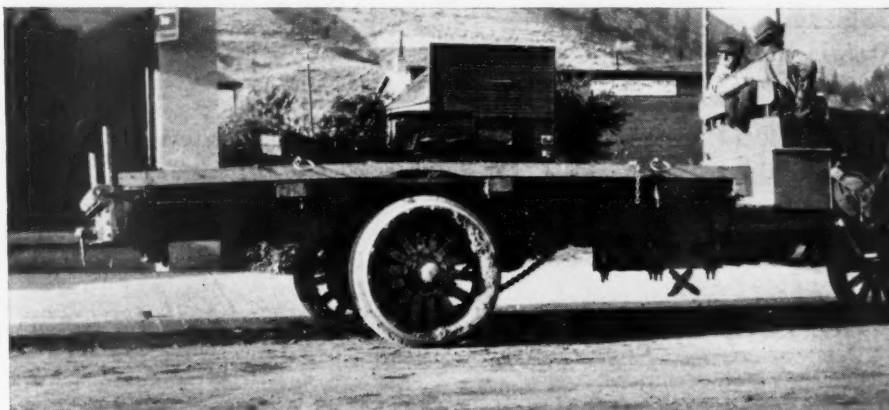
capacity trailer was drawn up on top of the truck and hauled back to the mill as a load, the added weight providing sufficient traction to enable one more trailer to be hauled in addition to the trailer on top of the truck.

Use Winch to Good Advantage

Another difficulty that had to be overcome was that the County Commissioners would not permit the complete outfit of loaded truck and trailer to pass over the bridges at one time. It was necessary to uncouple the trailers from the truck when bridges were encountered; then by means of a cable attached to the power winch, the trailers were drawn across the bridge indi-

Cashmere Lumber Co. which operates the truck.

The demonstration of the G. M. C. trucks as applied to the farms of the Northwest have resulted in the following conclusions: A 2-ton truck will operate satisfactorily with a trailer with $2\frac{1}{2}$ tons on the truck, and $1\frac{1}{2}$ tons on the trailer where the grade does not exceed 5 per cent. A 2-ton G. M. C. truck can haul 3 tons, but it is unwise to haul a trailer in addition to that load if the trip is longer than 15 miles. In other words, it is not a good plan to overload the truck to 50 per cent. more than its capacity if a loaded trailer is to be hauled.



Trailer Used by Cashmere Lumber Company

Note the power winch (marked x), which is operated from power take-off of engine

vidually, thereby obviating the overloading of the structure.

If the truck and trailer became imbedded in mud, it could pull itself out by means of a rope around a tree or fence and the power winch. These ingenious methods are working to the entire satisfaction of the

E. C. Finley, who runs a large farm in Eastern Washington, operates a G. M. C. truck with trailer. He ran his truck 145 miles in one day and for $72\frac{1}{2}$ miles it was loaded. He made five round trips—each one being 29 miles in length. The total hours of time occupied from start to finish, deducting two hours for meals, was thirteen. The total number of tons of wheat carried was 15, or 522 bushels.

The truck traveled an average speed of 11 2-13 miles an hour; during the 145 miles of the trip 20 gal. of gasoline at \$.19 per gal. were used—making an average fuel cost of \$.019 per mile. Three quarts of lubricating oil were consumed, at \$.35 per gal. There were three grades on the trip which averaged between 10 and 11 per cent.; two grades at $7\frac{1}{2}$ per cent., and at no time in the entire 145 miles were the low gears used.

The Mountain Mill Co., of Ashford, Wash., uses a specially designed trailer with an 18-ft. body, which is attached to their $1\frac{1}{2}$ -ton G. M. C. truck by means of strong coupling. It consists of a block that is fastened to the frame by means of steel uprights. The trailer rests on a specially constructed steel axle and wheels which are made of metal with rubber tires, 36 x 5.

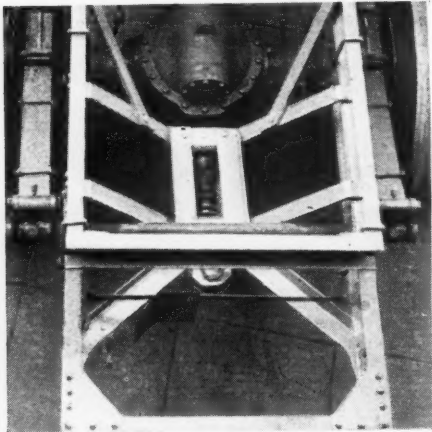


Trailer in Operation by Cashmere Lumber Company

Using a three and a half ton GMC Truck

Interesting and helpful information; reputable advertisements—that's the CCJ

By means of a $1\frac{1}{2}$ -ton G. M. C. truck and a trailer the company is enabled to haul one-sixth of a freight car load of shingles on one trip from its timber tract on the mountain side adjoining Rainier National Park, to its mill at Ashford, on



The GMC Trailer Coupling

Note that the coupling is not attached to the rear axle, but to the frame, by heavy steel braces. A heavy spring relieves the frame of sudden shocks.

the Tacoma and Eastern Railway. On account of the high altitude and the continued dampness, the roadbed was so soft that it was impossible to operate a $1\frac{1}{2}$ -ton truck with a $1\frac{1}{2}$ -ton load. However, by distributing the shingles over three sets of wheels through the use of a trailer, a proper distribution of the weight permits the successful operation of the truck over the difficult road with a body 18 ft. long, accommodating 30,000 shingles.

H. H. Harwood, of the Northwest Buick Co., stated that when the truck and trailer were delivered a load of two tons of oil and gasoline was carried from Seattle to Ashford one hour after the arrival of the truck. It had been placed in

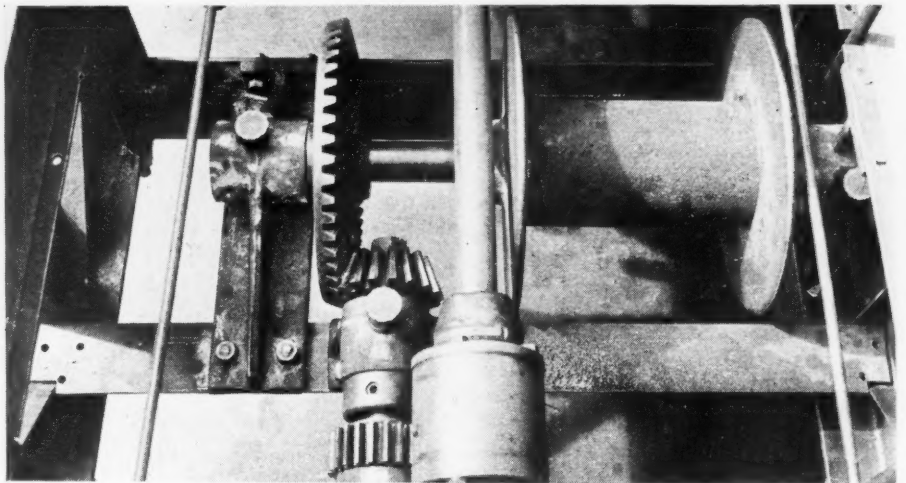
service and had delivered its first load of 30,000 shingles through a driving rainstorm over a distance of six miles. It now makes the round trip of twelve miles, including unloading, in an hour and a half, and has supplanted two big four-horse teams and two big wagons, and has decreased the company's operating cost and increased their production over one-third.

The P. L. H. Logging Co., of Enumclaw, Wash., has kept an accurate account of the operating expense on their 60-h.p. White truck, which has been drawing logs with a trailer. The average load is 4000 ft. of fir lumber, or 14 tons. Figuring oil at \$.41

license, these three items cost the company \$.10 per mile, figuring an average of 35 miles a day. The repairs cost approximately \$.04 per mile, while the rental and incidentals were \$.01 per mile—making a total operating cost, including everything, at \$.30 per mile. This figure seems high, but the cost is not considered large when it is realized that 14 tons are carried on 35-mile trips.

Wagon Wheels Were Replaced by Truck Wheels

For a long time, old style logging wagon wheels were used on trailers for Kelly-



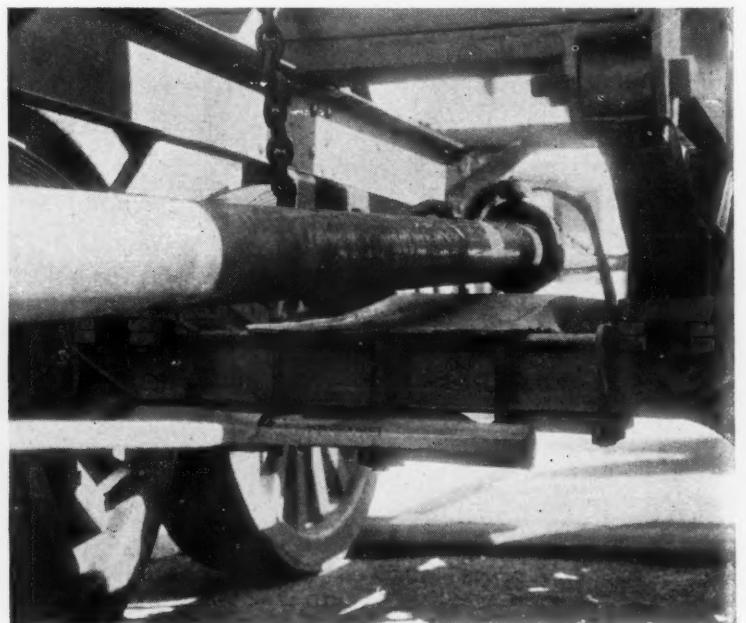
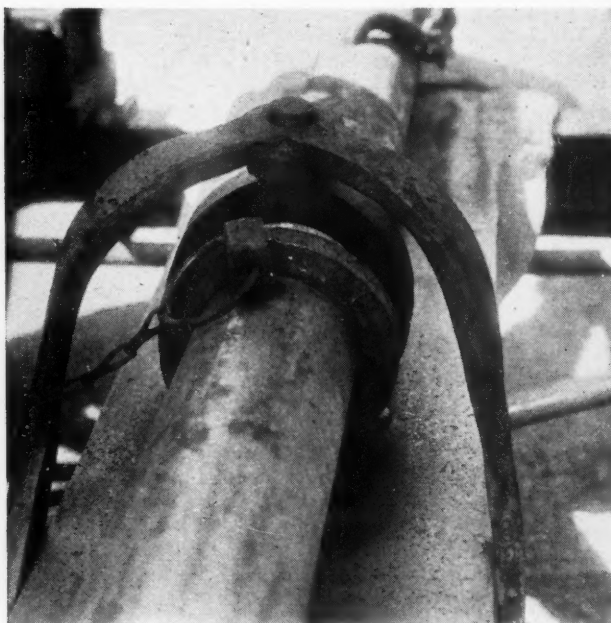
Power Winch Used in GMC Trucks

It is attached to power take-off of engine and used to lift things into the body, pull trailers across bridges when they have to be detached from the truck, and to haul the truck out of the mud by putting a rope around a tree or fence.

per gal., the cost was \$.01½ per mile; gasoline at \$.20 per gal. was \$.13 per mile, while grease was \$.00½ per mile; the actual operating expense was \$.15 per mile.

Estimating the depreciation at 20 per cent. per annum in with the insurance and

Springfield trucks, but they were unable to bear up under the speed. Then a new trailer was built which withstood the strain of the weight but offered too heavy a pull. Better bearings were needed and the Kelly-Springfield Co., working with the



Two Detail Views of the Trailer Coupling Used on the GMC Trailer

On the left is seen the coupling pin, which is dropped into a series of holes in the long pipe. The coupling can thus be lengthened or shortened as desired

The CHILTON ideal—honest circulation; results to advertisers—fully exemplified in the CCJ

Seattle Car and Foundry Co., solved the problem with a trailer made from the rear wheels of a K-50 truck with regular bearings and seven individual tires.

The Brace & Hergert Mill Co. has a Kelly-Springfield truck and trailer of 3000 ft. capacity, which hauls logs $7\frac{1}{2}$ miles from the camp in Bothell. The truck has repeatedly made six round trips a day, averaging about two hours for the round trip. It is hauling more than its rated capacity, and during the six trips it carries a little more than 19,000 feet of timber. There is one bad sand cut in the road, a six per cent. grade and the remainder is fair, gravel surface road. The truck uses $22\frac{1}{2}$ gal. of gasoline a day for 90 miles, making a rate of four miles to the gallon.

Oscar Lindstrom has had a $5\frac{1}{2}$ -ton Kelly truck and trailer, with a capacity of 3000 ft. of timber, in use over dirt roads with grades up to fifteen per cent., near Grace, Wash. The truck displaced two four-horse teams, and in three months he completed his work of hauling more than a million logs. His loads were then limited to between 2000 and 3000 ft. of timber. However, with his newer model of trailer, his loads are very much larger.

The Beckstrom Logging Co., at Bothell next gave Mr. Lindstrom a contract to haul

on the two axles, and like the truck proper, it is surmounted by a bunk with adjustable squeeze blocks.

The wheels of the truck trailer are 44 in. in height and 46 in. in the rear, with 10 in. steel tires on both. The trailer is attached

to the truck by means of long pipe coupling.

The Truck Logging Co., of Snohomish, has been hauling logs very successfully seven miles through a huckleberry marsh to Snohomish River, into which they dump



Lumbering in the Forest of Our Great Northwest

Showing the three and a half ton worm-drive truck and four-wheel trailer at work in the forest. The huge flat tires on the trailers help to pack the road



GMC Truck and Trailer Carrying Load of Shingles

Operated by the Mountain Mill Company, of Ashford, Washington. The trailer body is eighteen feet long and carries one-sixth of a freightcar load of shingles on one trip

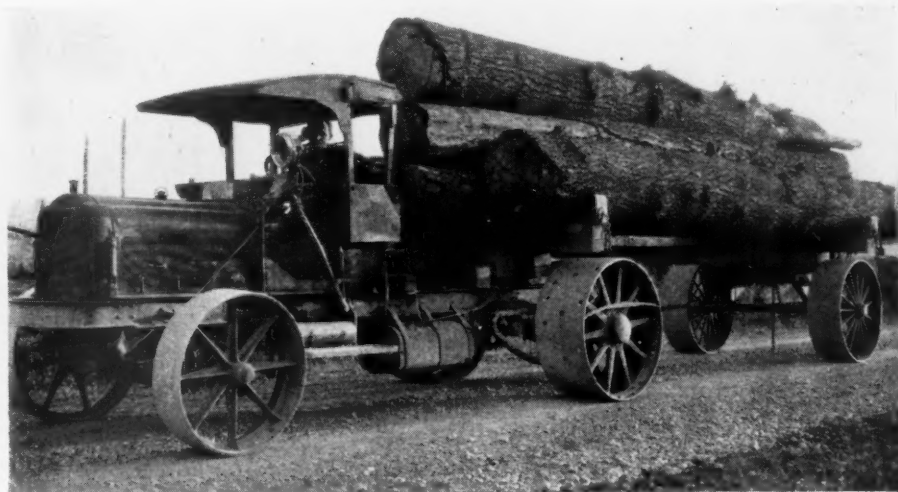
logs, and after seeing how much more efficient the truck was in the work, they tore up five miles of narrow gauge track which they had previously planned to extend. On this contract, 2800 ft. of timber to the load were handled over dirt roads, with 15 per cent. grades in many places.

The Snohomish Logging Co. has put a $3\frac{1}{2}$ -ton worm drive G. M. C. truck in service, with a four-wheel trailer, which can carry as high as 18 tons. The difficulty which many loggers have had is in making the trailers track with the truck and follow the road without cutting off the turns. The new trailer obviates this by means of a steering apparatus which affords a proper steering of both pairs of wheels so that it tracks perfectly. The truck with which the trailer is to be used is equipped with the usual bunk or bolsterer with an adjustable squeeze block carried over the rear axle. The trailer consists of a short coupled frame supported by four springs, carried

their logs, with a $3\frac{1}{2}$ -ton truck and trailer. They claim that where they use 17 gal. of gasoline without a trailer, they use 20 gal. with one—making a difference of only 3 gal. in a day.

F. B. Loughman and H. H. Loughman have recently purchased a $3\frac{1}{2}$ -ton Kelly-Springfield truck and trailer, which they have put in service for the hauling of logs. It carries as high as 15 tons at a load, and is giving excellent satisfaction.

The Reeves Logging Co., of Gig Harbor, Wash., has been using a 5-ton G. M. C. truck for two years in conjunction with a four-wheeled trailer and have hauled as high as 4000 ft. of timber at a load over roads that have been considered impossible because of 10 per cent. gradients and the way that it leads around steep hills, which are kept continuously wet by spring water passing over them. One load hauled by



A Typical Load Which is Handled With Ease by the Truck and Trailer

This five-ton White is in use of the P. L. H. Logging Company, and makes regular trips between the railroad station and lumber camp. The distance is five miles, with a rise of 250 ft. The face measurements of the steel wheels on this outfit are: front, 10 in.; rear, 20 in.; trailer, 16 in.

Everybody who is anybody in the truck industry reads the CCJ

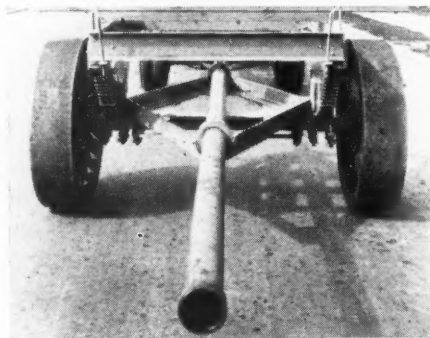
their truck that caused considerable comment, was a huge log, 9 ft. and 6¾ in. in diameter, weight 14¾ tons and 32 ft. in length. It was easily carried by means of their four-wheeled trailer.

In speaking of the results obtained from his truck, Mr. Reeves, head of Reeves Logging Co., stated that in the two years his total expense other than operating expenses, such as fuel, oil and tires, had been the purchase of one spark plug and a new fan belt. He stated that he had become thoroughly convinced that the most economical method of logging was by motor truck, and that there was no substitute for such a mode of conveyance at this time.

Conclusion

After a study of the trailer situation in the Northwest, and an interview with several dealers, the following conclusions have been made: 1. Two-wheeled trailers are more practical than four-wheeled ones because they are not so cumbersome and do not strain the truck that pulls them to the breaking point. 2. It is sufficient to have the brakes on the truck proper and

superfluous on the trailer. 3. There is a diversity of opinion over the question of the way in which the trailer should be at-



Rear View of GMC Trailer

Note the wide wheels. This two-wheeled trailer is being used by Frank L. Smith, in the logging business on Whidby Island.

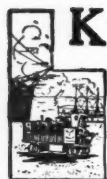
tached. Some dealers claim that it should be attached to the frame, and others to the axle. 4. The additional consumption of gasoline is very slight in proportion to the

added tonnage. 5. The tire wear resulting from the use of a trailer is nominal. 6. Loads as big as 18 tons can be carried. 7. The possibility of injury to the car through the use of a trailer is slight if one is careful to load the vehicles properly. 8. From a financial standpoint the trailer will be of great value to the dealer, as it will give him the opportunity to increase his profits and make it possible for him to make new deals with the customers to whom he has already sold trucks. 9. It is a great aid to the truck owner, for with it he can carry larger loads by the expenditure of a little extra money for gasoline and sundries.

The trailer has come to stay, and it is another added feature of the automobile industry which tends to place it upon a more staple financial basis, for every time that the commercial car is put to a new practical use it makes the demand just so much larger and steadier. The trailer is, therefore, a welcome newcomer to the ever-increasing number of adjuncts to the motor car.

WHAT KANSAS CITY USERS THINK OF THE TRAILER

By W. D. MENG



KANSAS CITY is just beginning to find the utility of the trailer, and the few cases where it has been given a fair chance, has demonstrated marked savings. It has been chiefly adopted because it gives great flexibility to the freight facilities.

"The commercial trailer is growing in popularity," said James A. Keating, manager of the local agency of P. J. Downes & Co. "The injury to the car or truck through the use of a trailer is negligible. Four-wheel trailers do not seem to be gaining as rapidly as the two-wheel trailers, but are accorded the advantage of carrying more than their rated capacity. The chassis wear cannot be noted, but there is distinct added wear on the tires of the rear wheels of the drawing vehicle. In most cases in this district the trailer is attached to the frame of the drawing vehicle. The only method, apparently, of braking the trailer is against the truck of the car pulling it."

The Aines Dairy Co., at Kansas City, Mo., has worked out a definite service for a trailer, and knows just where money is saved by its use. The company has a plant at Overland, 10 miles from Kansas City, and other collecting stations, its distributing plant being in Kansas City. In the summer the present milk supply and output keeps two 2-ton White trucks and a 3-ton Packard busy, making two trips a day, loaded tolerably close to capacity. It is necessary to gather the milk twice a day in summer and hurry it to the city plant; and the trucks are put to their best speed that the milk be not allowed to get warm on the way.

Further, the loads must not be too heavy, both to avoid strain on the engine in hot weather, and to avoid risking too much milk on one truck. The danger of overheating the engine with extra strain is an-

other reason that the trailer is not used in the summer.

Trailer Useful in Winter

But in the winter the conditions are changed. Only one trip a day is made, because of the greater average difficulty of getting over the ground. With cold weather speed is not so much an object, but it is necessary to get the large amount of milk to the city on this one trip. It is here that the trailer found its utility. It makes an 8,000 lb. carrier out of a 2-ton truck. The trailer is rated at 3,000 lbs., but carries even more. It is chiefly used with one of the 2-ton Whites and occasionally with a 40 h.p. touring car.

The trailer, therefore, practically doubles the capacity of the available trucks and makes trucks out of touring cars.

The cost of operating the trailer is inconsiderable. A trip with a truck costs \$3.50. To this must be added, on account of the trailer, an hour's time of the driver because of the lower speed necessary, and 20 per cent. of the usual cost of gasoline. The trailer is also used to carry empty cans and bottles back, and to haul feed and other freight. And the total cost of operating the trailer is under \$.25 a day.

Wants Brakes for Trailer

The chief difficulty with the trailer is in braking. Mr. Aines, manager of the company, hereby sends out a cry for a brake on the trailer that can be manipulated by the driver of the drawing vehicle. However, he has had but one accident due to the lack of a brake. A man got stuck on a soft winter road, the truck wheels being imbedded. He was on a slope and when he unhooked the trailer to get the truck out the trailer went backward down hill.

Gas Meters Delivered by Trailers

The Kansas City Gas Co. has found a trailer, especially designed, to be a highly economical and convenient means of giving flexibility to its meter delivering equipment. The trailer has a body 92 in. long, 38 in. wide, and about 4 ft. high. Within

are two shelves, each divided longitudinally and laterally, giving four compartments on each shelf, and designed to hold 35 meters; there are also accommodations for minor equipment. The trailer is used only for delivering new meters to replace old ones, the law requiring replacement every five years. The company has about 65,000 customers, and replaces about 100 meters a day.

The Suburban Motor Transportation Co., Kansas City, Mo., has found a home-made two-wheeled trailer, a heavy affair with broad wheels, steel-tired, a successful adjunct to its trucks in hauling milk and other freight between Belton and Kansas City, 30 miles. The trailer carries 3,500 lbs. and is hauled by a 4-ton truck. Milk supply drops in the summer, and the trailer is not used then, but its use is resumed in the winter, when also the number of trips is minimized as much as possible. The company operates seven trucks now between Kansas City and towns within a radius of 30 miles, and is seeing in the trailer a means of largely increasing the capacity of its trucks at small expense.

Shipping Carloads of Trailers

William G. Hesse & Son Mfg. Co., Leavenworth, Kans., reports that it has been shipping trailers for some time to the Pacific Coast in carload lots. The first carload shipment was in October, 1915, and every month since a similar shipment has gone. The trailers range from the little two-wheel affairs from 800 lbs. capacity, for light loading, up to 6-ton trailers. The company has supplied many hospital trailers for the army at the border. The four-wheel trailers, the largest part of the output, have artillery wheels and the company's patented tracking gear.

The latest carload shipped by the company, in August, was to Los Angeles, consisting of 3, 4, 5 and 6-ton trailers. They are to be used to haul merchandise 30 miles and more up the valley, two or three of them being pulled by a big truck at a time.

The Why, When and Where of the Heavy Trailer

By C. B. MONTGOMERY



IN the following article the writer will attempt to show when a trailer may profitably be used; the relative advantages and disadvantages of the various types; some comparative costs, laws governing the use of, and some general observations on the present and future of the trailer industry.

The theory of drawbar pull, i. e., that that a load may be pulled with one-third to one-half the effort required to carry it is so well understood that it need only be stated here.

It is equally well understood that (within certain limitations) the cost of hauling decreases in almost inverse ratio as the load increases.

When to Use a Trailer

But larger loads on the truck brought innumerable difficulties in design and operation and it was soon conceded that five or six-ton loads were the limit for conservative trucking. So the trailer becomes the logical complement of the truck where the below mentioned conditions do not preclude its use.

While the trailer adds no direct weight to the truck, it does impose more work on the engine, and on up-grades this results in lowering the speed. If grades are severe or if road surfaces are poor this reduction in speed might be so great as to make a trailer uneconomical.

But let it be noted in passing, that this, the most weighty argument against trailers, is fast being nullified. Modern road building sanctions the eliminating of grades and provides smooth, hard surfaces for the heaviest traffic.

Elaborate tables and curves have been prepared showing the effect of grades and road surfaces on trucks. These will not be

by means of a shock-absorbing fifth wheel to the tractor. The rear end carries from 65 to 85 per cent. of the load and is usually fitted with steel tires.

The principal advantage of this type trailer is the saving on tires. This is not great, however, as the tires on the rear of the tractor should be one inch wider, weight for weight, when hauling a semi-trailer, and the steel tires on the trailer wear badly and frequently break if many car tracks are crossed.

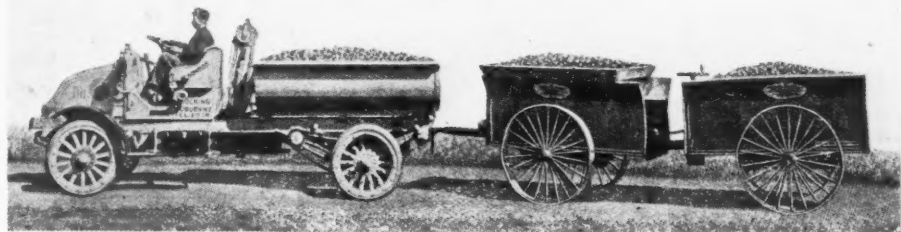
These semi-trailers perhaps find their most practical application in the hauling of long rails, lumber, structural steel work, etc.

Another advantage found with the use of the semi-trailer is that considerable time

conditions of road surfaces and mechanical condition of truck.

Steel tires may be used instead of rubber, but for city use would be found less satisfactory. Rubber tires permit a greater speed and excepting on rough country roads, give as good service as those of steel. This type of equipment is highly recommended.

Two-wheel trailers may also be obtained and used behind trucks with economy. Two-wheel carts running on steel tires are particularly adapted to country work, road construction, etc. They are low in first cost and their upkeep is negligible. They are frequently used behind traction engines in trains of two to eight carts.



The Two-Wheeled Cart Trailer is Frequently Used on Road Work

Some Comparative Costs

A detailed idea of the savings to be effected with trailers may be gained from the following table, assuming these normal conditions:

A quantity of stone to be moved a distance of five miles, loading time two minutes per ton, unloading one minute per ton.

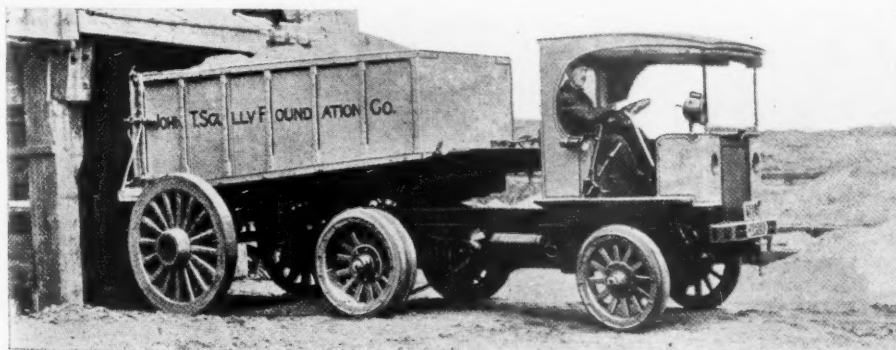
Cost of five-ton truck (less tires) \$4300; life of 45,000 miles. Tires, \$250, 7000 miles; load carried five tons.

Cost of tractor-truck same; life of 41,000 miles. Tires (one inch wider on rear), \$300, 7,000 miles.

Cost of four-wheel trailer (similar to Fig. 7) \$1400; life of 60,000 miles. Tires \$200, 7000 miles. Load carried four tons on truck, five tons on trailer.

	Comparative Costs	
	Truck.	Truck & Trailer.
Speed (Miles per hour)	7.5	6.5
Miles per day .....63.1		50.3
Tons delivered per day ...	31.6	45.3
Miles per gallon of gas	3.5	2.1

	Expense Per Day	
	Truck.	Truck & Trailer.
Driver	\$3.00	\$3.00
Gas. & Oil	4.30	5.60
Tires	2.25	3.59
Depreciation	6.03	6.45
Sundry Repairs ...	3.79	4.02
Insurance .....	.43	.57
Interest .....	.55	.74
License Fee .....	.10	.11
	<hr/> \$20.45	<hr/> \$24.08
Cost per ton .....	.647	.532
Saving with trailers		17.8 per cent.



An Example of the Semi-Type Trailer

repeated here as they are matters of common knowledge to the engineer and are of but little value to the layman. About 8 per cent. is perhaps the maximum grade for trailers, and less if road surfaces are poor.

The Various Types

The trailer principle has been utilized in several ways.

The semi-trailer carries extra large loads in single units. The front end is attached

flour, small machinery, etc., are to be moved to one destination.

For this purpose trucks of all makes are used, in five-ton size mostly, and haul, in addition to their own load, one or sometimes two trailers of similar capacity.

It will be found good practice to load the tractor truck to about 75 per cent. of its capacity and then pull in four-wheel trailers from 70 to 140 per cent. of its capacity, depending on grades to be encountered,

Merit wins—that's why the CCJ is the leader

Laws Governing Trailers

Considerable ignorance exists as to the attitude of highway departments regarding the use of trailers on the public roads and bridges. Below is given a summary of the laws of Pennsylvania, New York and New Jersey.

A trailer must be registered similarly to a truck. Fee, \$3 per year. Over 5 tons, \$5. In New York a photograph must accompany application.

Trailers may not be run over ten miles per hour and in New Jersey if metal tires are used eight miles per hour is the maximum.

In New York 12 miles per hour is allowed on rubber tires, while on metal 6 miles per hour is the maximum.

Local authorities are empowered to reduce this speed where conditions warrant. On bridges, 6 miles per hour is the limit.

Extreme width of vehicle over all may not exceed 90 in.

No greater weight than 9 tons may be carried on any one axle.

Pennsylvania requires that not over 750 lbs. per in. in width of tire be carried, while New York and New Jersey allow 800 lbs. per in.

Summary

It may be said that the tractor-trailer industry is to-day where the motor truck industry was ten or twelve years ago.

Trailers have their champions and their detractors. Some have tried them and returned to trucks. Very well, some have

tried trucks and returned to horses. Some horse users of yesterday to-day own trucks.

And many truck users of to-day will be trailer users of to-morrow.

Within a few years after the general adoption of motor trucks, trailers began to make their appearance. First came the wagons, built for use behind horses. These proved unsatisfactory and soon most of them had disappeared.

Experimenting with specially constructed trailers began about 1910, but their first appearance on the market was not until about the beginning of 1913.

These early models have gradually been improved and refined until to-day a good trailer shows all the skill and perfection of a good truck.

On the Trail of the Trailer

By C. L. EDHOLM



THE trail of the trailer has developed from a dim wheelmark to a well paved highway, a road that is paved with profits for the man who employs the motor for hauling.

From the earlier types of trailers, which were more or less crude makeshifts, types have been developed which are scientifically correct, giving the least trouble to the drivers in backing and turning and giving the most satisfaction to owners in the economy of operation. So today the trailer is a well recognized adjunct to the motor, and is found in a wide variety of forms and sizes, from the light weight box on wheels for use behind a small car to the huge machines (used by the New York Department of Street Cleaning), which have a capacity of 10 cu. yds.

One of the most popular types of trailer for all around hauling purposes is that which depends upon the rocking fifth wheel for its connection with the motor, a type known as the semi-trailer to distinguish it from four-wheel trailers.

for its connection with the motor, a type known as the semi-trailer to distinguish it from four-wheel trailers.

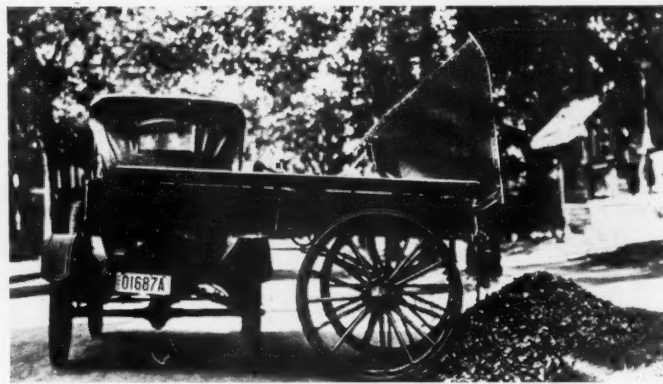
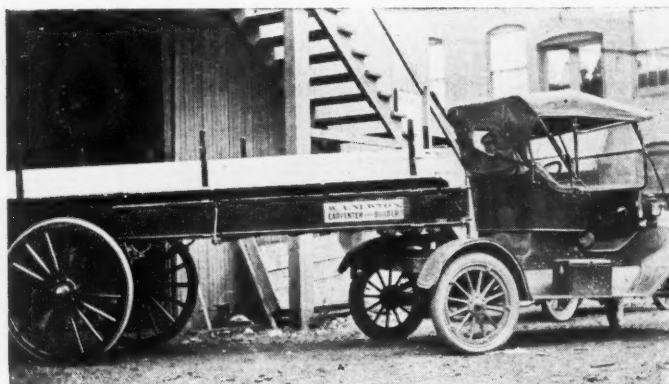
It is used in connection with many varieties of tractor, ranging from the small runabout to powerful trucks, and used for purposes so dissimilar as hauling a load of fodder corn on the farm to trailing a load of lumber or a ponderous fire apparatus.

The first question asked by a practical man in considering a new device is, "Will it work efficiently and profitably?" Here is an answer in the experience of one firm that has tried it out thoroughly. C. P. Chase

& Co., Inc., lumber dealers, of Springfield, Mass., state that they used one of the Martin semi-trailers for about nine months, and will continue to use it because it saved them about 25 per cent. on the cost of delivery as compared to delivery by teams. In that period the semi-trailer, attached to a Ford runabout, ran approximately 3600 miles with loads that weighed from 1000 to 2000 lbs., and in a few cases had a weight 3300 lbs.

Another advantage of the readily detachable trailer is the fact that several of them can be used for a single motor. Thus a

driver can return from a delivery trip with an empty trailer, detach it at the loading platform and immediately attach another trailer which has been loaded and checked while he was on the road. Thus the time of the driver is saved and the time of the motor as well. In some cases this may result in the use of fewer motors and drivers to accomplish the same amount of work. The plan can be extended in some lines of business to include the use of another trailer



Several Applications of the Martin Fifth Wheel

Shows it in use on the farm, by the carpenters, and on the lower right with an automatic quick-dumping one-yard bucket. The bucket discharges its load in ten seconds and flies back into place automatically

The CCJ is built upon the lasting foundation of honest circulation

so that the motor can leave its load at the unloading point, and pick up a trailer which has been unloaded while he was bringing the second load. Where there is

ments. Its rocking construction makes for flexibility, which is essential in traveling over rough and rolling roads.

Important to the firm that does general



Martin Semi-Trailer in Use by Lumber Company, Hauling a Full Load

Below is Shown a Moving Van Hauled by Ford Runabout With Semi-Trailer and Martin Rocking Fifth Wheel



a system of regular hauling between two points, this plan could be used to great advantage, cutting the idle time of car and driver to a minimum.

The semi-trailer, connected to the truck or light car by the Martin rocking fifth wheel, has certain advantages of importance. In those cities which prohibit the use of four-wheel trailers, this type is permissible, as it forms a compact unit with the motor, in fact, it becomes part of a six-wheel motor instead of a separate vehicle following a car. Its scientifically devised connection makes it easy to back and turn in congested traffic or in narrow loading yards. In backing up to the curb, the combination can be "jack-knifed," the motor being at right angles to the trailer and partly beneath it. No extra man is needed to back the semi-trailer into position; it is all done from the driver's seat. Its advantage over the balanced two-wheel trailer is that it follows accurately, not whipping from side to side or showing a tendency to upset at high speed.

As the fifth wheel is placed over the driving wheels of the truck or car, the weight of the load is carried in part by the rear wheels of the motor vehicle, thus making traction on muddy roads or slippery pave-

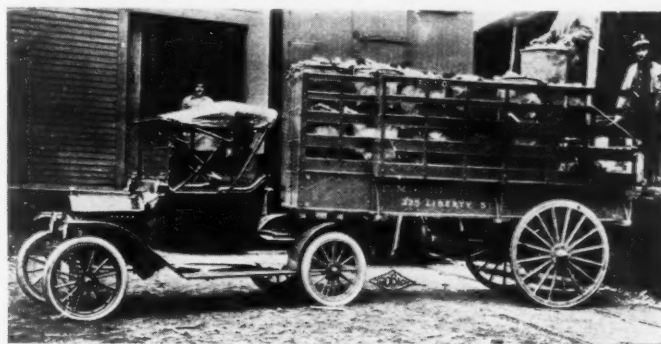
ment, is the variety of loads that can be handled by a single tractor. Instead of buying several trucks for different classes of

goods, he can with the same motor, haul trailer or semi-trailer bodies suitable for carrying hardware or hay, milk, ashes or passengers. As the cost of the bodies is comparatively slight (compared to the cost of several trucks for specific purposes) an up-to-date equipment can be secured for general hauling by the purchase of a few trucks and a variety of trailers.

For the small retailer, the farmer, the transfer man and others whose business does not require the use of a large commercial car, the combination of a small runabout and the semi-trailer is exceedingly economical and efficient. The use of the automobile for pleasure, or as a salesman's car, is not impaired, as the trailer is so readily removed that the machine is instantly available for independent use, and the rear deck of the runabout conceals all traces of its use as a delivery vehicle. Thus a grocer, for instance, can send out a solicitor in the runabout in the forenoon, and in the afternoon can attach the semi-trailer and deliver with the same car. With such an outfit he can carry as much as a one-ton truck would handle, and he can operate it at the speed of twenty miles an hour.

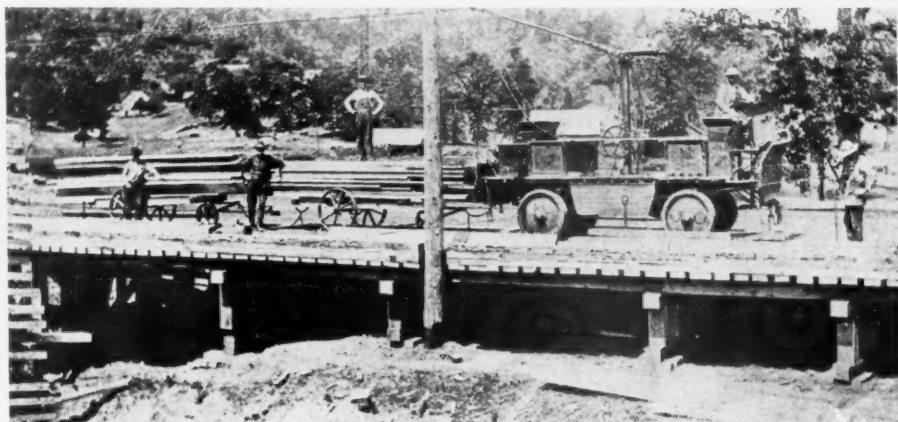
In the same way, the farmer or small dairyman can use the outfit for hauling fodder about the farm, for carrying milk to the creamery or his pigs or calves to market, and still have the benefit of a neat vehicle for pleasure or business trips.

Martin Special Semi-Trailer Used by the F. M. West Box Company, Springfield, Mass. It Has a Two Thousand Pound Load of Kindling Wood



INDEPENDENT OIL MEN'S ASSOCIATION HAS GASOLINE RELIEF COMMITTEE

An association at 110 S. Dearborn Street, Chicago, known as the Independent Oil Men's Association, which it is understood is a continuation or reorganization of the former Petroleum Marketers' Association of Cleveland, has a committee known as the Gasoline Relief Committee. To them members or others are requested to refer all inventions which have to do with the increase of gasoline or motor fuel by refining methods and the adaptability of low grade fuels in internal combustion engines of all kinds by improvement in mechanism of the engine, carburetor or mixer. A sub-committee, it is said, has been appointed to investigate all methods presented to them for the development of devices for burning low grade fuel, either in automobiles or tractors.



Motor Truck Operates by Trolley

An electric truck which is driven by motors in the four wheels is outfitted to receive its electric power from an overhead trolley, in that way dispensing with the use of storage batteries. The Couple Gear truck is employed as a tractor, hauling strings of trailers loaded with lumber, and in this way does the work of a small locomotive and eliminates the use of tracks as well.

THE EAGLE TWO-WHEELED CART TRAILER



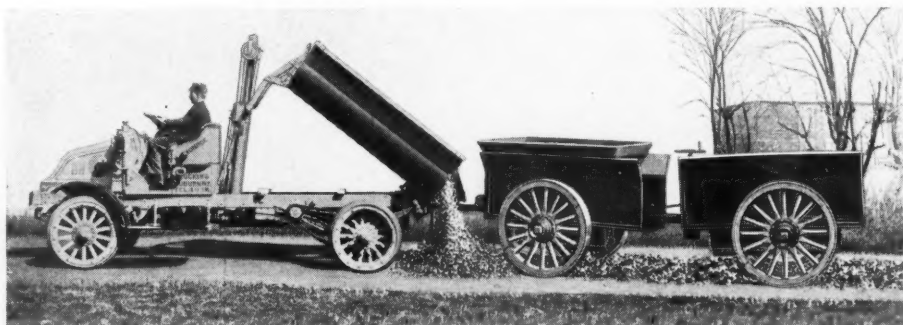
CONTENDING that the two-wheeled type trailer is best suited for hauling crushed stone, sand and road building material and which contentions are the result of practical experience, has led the Eagle Wagon Works, of Auburn, N. Y., to specialize in the Eagle two-wheeled cart type trailer shown in the accompanying illustrations.

One of the features noted in the construction of this trailer is the fact that the carts run either way and can be placed where wanted, whether being pushed or pulled. Each trailer or cart has two distinct ends, one of which is called the flexible end and the other the rigid end. The flexible end is fitted with a sawtooth brace which can be lowered or raised as desired. This flexible end with the sawtooth brace cares for all the adjustments for uneven ground or road bed, also cares for the necessary adjustment when one cart is in a hollow and the other on a knoll, and

finally makes the train reversible without pins or levers.

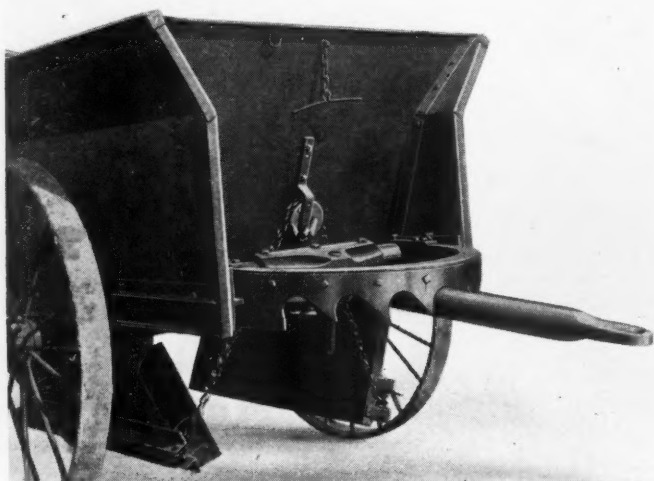
Both sawtooth braces of the draw bar are never down at the same time, excepting when the operator wishes to push his train straight ahead. By dropping down both braces, the train becomes much more rigid and the operator will have no trouble to push the train on a new road bed where he wants to drop the load and where he

would not want to run the tractor. It, however, must be remembered, that the train cannot be pushed nor pulled around curves or corners with both braces down. These braces act as hounds to the draw bar and in pushing or pulling the rear one is always expected to be down. The sawtooth brace and the draw bar allows the operator to hook his train on the tractor at any angle and then drop his sawtooth brace and



Eagle Carts Attached to a Five-Ton Truck

The illustration shows the carts just after having dumped a load of crushed stone. Each cart in this case carried two and a half yards of stone. The carts can be dumped without any uncoupling or changing of any kind.



The Flexible End of a Two-Wheeled Cart

The chain device for raising the doors is fitted with the Eagle equalizer, which raises one door up and laps the other under it



The Rigid End of the Cart

The lever for dumping the cart is placed at this end of the cart. Two rigid and two flexible ends are always placed end to end. Thus two carts can be dumped without the operator changing his position in the train.



This Also Comes Under the Category of Trailers

Showing how Ira Wilson, near Redford, Mich., utilizes one of seven Model J two-ton Reos, hauling the hay loader when not otherwise employed doing work on a milk route throughout that territory. The wagon tongue is so attached to the truck that the wagon can be readily backed into the barn. The hay is loaded on to the wagon instead of on the truck, as Mr. Wilson is very particular not to allow motor power of any description in his farm buildings. Not that he considers it dangerous from a standpoint of conflagration, but believes in "Safety First."

it will always find its center so that the first cart will pull straight.

The rigid end of the trailer is shown by one of the illustrations, which shows at the same time the steering apparatus. The draw bar, which connects the trailers, extends back between two solid angles and takes hold of the load far enough back of these angles so that the angles themselves become a brace keeping the cart from tipping up, while an equalizing bar running from the front corner of one cart to the rear corner of the other cart holds the carts from whipping or running zig-zag. In turning corners the outward swing of the rear end of the forward cart turns the front end of the following cart out also, so that the tracking is perfect.

These trailers dump down through the bottom the same as a dump wagon drops its load, and they hold two yds. each. They can be used in connection with either a truck or road tractor.

For its readers—information; for its advertisers—results. That's the purpose of the CCJ

FLAT-CAR TRAILER AND MOTOR TRUCK SALVAGE RAILS

ARTICLE X C L

Commercial cars equipped with steel flanged wheels for operating on rails have made it possible and practical for railroads and construction companies to salvage rails on abandoned spur lines and in construction camps where heretofore the cost of reclaiming the rails by other methods would have been prohibitive.

The high price of steel has given an added impetus to railroads to investigate the practicability of motor trucks in this field, and a test made by the Black Hills Transfer Co., at Nahant, Mont., in carrying out a contract for the Burlington Railroad, bespeaks the success of the trucks.

The Burlington Railroad decided to salvage the rails on the abandoned McLaughlin lumber and tie road connecting the station at Nahant, on the Burlington system

After working on several schemes and later finding them impracticable the contractors decided to test out a motor truck.

An order was placed with the White Co., in Cleveland, for a standard 1½-ton truck, which was shipped to the Burlington Railroad shops, at Havelock, Neb. Here it was equipped with a set of steel wheels with flanges for operating on rails, re-shipped to Nahant, Mont., and put to work.

In the first month the truck was in service it covered about 3,300 miles, averaging 108 miles a day, and by the use of a flat car as a trailer, was able to haul 12 tons of rails into Nahant each trip. The truck made two round trips a day, climbing several grades as steep as 7 per cent. on second and third gear, and registering an economy record of better than 10 miles to a gallon of gasoline. After depositing its load at Nahant, the truck covered the 27 miles to the forests on fourth speed.

GRAND RAPIDS TO MOTORIZE GARBAGE DEPARTMENT

By C. W. SHAFER, News, Grand Rapids, Mich.

A plan has been submitted to the Board of Health at Grand Rapids, Mich., by Dr. D. Emmett Welsh for motorizing the garbage department. The idea has already been given the support of Mayor George P. Tilma and it is likely that it will be carried before spring.

It is proposed that the present equipment of horses, harness, wagons, etc., be disposed of at a sale and the proceeds, with other moneys, be used in purchasing motor trucks. The figures submitted show that the cost of motor operation will be less than under the present system because one truck, with two men, can be made to do the work that is done now by four men.

At the present time a great deal of dissatisfaction is expressed regarding the collection of garbage which, with horses and wagons, is inadequate. In some sections the outfits make only one call a week and the department declares that it is impossible to reach the sections any oftener. With the recent annexation of a large part of a territory on the southern limits of the city the motorization plan is practically mandatory.

FIFTH EDITION OF DYKE'S AUTO ENCYCLOPEDIA

Many new subjects have been added to the newest edition of Dyke's Auto Encyclopedia, published by A. L. Dyke, Roe Bldg., St. Louis, Mo. This Encyclopedia is undoubtedly the most comprehensive guide to everything pertaining to motoring and automobile construction that has ever been published. The book sells at \$3, and contains 824 pages, with 2370 illustrations. All the leading makes of electric lighting and starting systems are thoroughly explained and illustrated.



Flat-Car Trailer

This flat-car trailer, drawn by a White truck, was used in salvaging the rails of abandoned spur lines, where heretofore the cost of reclaiming the rails by other methods would have been prohibitive

in the Black Hills of Montana, with the great forests 35 miles to the west, and the contract for the job was awarded to the Black Hills Transfer Co.

The McLaughlin Line had been abandoned several years ago on account of the timber being exhausted and the enforcement of the Forest Reserve Act, and when the transfer company tackled the job they were confronted with many obstacles. A locomotive could not be used to haul the rails because the forest reserve laws required oil burning locomotives and the only ones available were wood burners. The track had not been kept in repair and the cost of putting it in shape to permit the use of a heavy locomotive would have been prohibitive. Another objectionable feature to the use of a locomotive was the rank growth of long and tough grass over the rails, which in some places had grown to a height of 18 inches, weaving a network over the track that completely obstructed it from view.



One Hundred Years Ago and Today

One hundred years ago, when they founded the city of Pontiac, Mich., the settlers toted in their belongings on pack mules. Today they are sending out the products of their manufacturing plants in General Motors trucks, which are made there. As is shown by the illustration, the pack mules come ahead of the truck—but that was simply to preserve the historic unity in the recent centennial celebration parade in Pontiac. The truck—one of the GMC stock models—is a five-ton vehicle and is pulling a heavily loaded trailer. Every industry in Pontiac was represented in this parade, but the unique contrast between the long-eared burro staggering under a few hundred pounds, and the smooth-running truck traveling easily with a load of tons, was one of the "hits" of the procession.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

REPLACING THE ONE-HORSE WAGON WITH THE COMMERCIAL CAR

By GEO. W. GRUPP



THERE are many opinions advanced as to the practicability of replacing the one-horse vehicle with a commercial car. In the following article a number of experiences are cited of Buffalo concerns that have successfully replaced the one-horse wagon with the motor truck.

Grocer Saves Fourteen Dollars a Month

George M. Schmitt, a local grocer, who operates a 1000 lb. Lippard-Stewart, claims that he is saving \$14 a month by having replaced his horse. During a period of four months he was able to cover 2200 miles against 700 miles which would have been only possible with his horse. The cost of operating his truck, less driver's wages, is only \$1.37 a day.

Erie Mill and Marine Supply Company

The Erie Mill and Marine Supply Co., who replaced their one-horse vehicle with a 1500 lb. Lippard-Stewart, are able to operate their truck at the following cost per day:

	Per Day
Total repairs for three years \$315.27	\$0.68
Oil and gasoline, based on five months	\$5.00 .56
Tires, 1c per mile .....	.30
Driver (present driver only receives \$1.66 per day).....	2.00
Depreciation, based on three years and allowance.....\$675.00	.75
Total	\$4.29

In other words, to deliver goods for eight days would be \$34.32. These figures this company compared with those of a horse-driven delivery, known as "The Delivery Co." They wanted \$47.56 to do the same work for the same number of days, and their prices were quoted from their regular contract prices. At once one can see that they saved \$13.24 by selling their

own horse or by hiring a delivery company and instead having bought a motor truck.

Saves Two Cents Per Package

Faxon, Williams & Faxon, local retail grocers, some time ago disposed of their 14 single horse-driven vehicles and bought 7 Ford deliveries. With these machines this firm, which delivers 30,000 packages a year, within a radius of 10 miles from their stores, have been able to save two cents on every package delivered, over and above the cost of horse delivery service. This means that they are saving annually \$600 in addition to the 25 per cent. decrease in the cost of upkeep. With such results this firm expects that their trucks, in three and one-half years, will have paid for themselves and be paying dividends at the end of the fourth year.

Benjamin King, owner of the Black Rock Delivery Co., and who operates a

"Yes, sir, that truck is in continuous operation from 7.30 A. M. to 9.00 P. M., and between those hours it covers, on the average, of 60 miles. And in that time I consume 4½ gal. of gasoline and 1 pint of oil. In the four months that I have operated that truck I have only had two punctures. Now with my horse and wagon I would never have been able to do so much work. The horse would have long been dead."

Buffalo's Bureau of Streets

Up until a few months ago the Bureau of Streets, Sewerage Division, of Buffalo, used a one-horse wagon, but now they use a 1¼-ton truck. And it was not long after they had bought the truck that they discovered that they could put it to more uses than were required of it in the sewerage division. Now it is being used to deliver their portable pipe line pavement flushing



Stewart Truck, Which Carries Flushing Apparatus

1000-lb. Stewart, tells this glaring story: "That truck of mine not only replaced my horse vehicle but does three times the work. With that truck I deliver freight, water, groceries, move people and all sorts of things. I run it seven days a week. I don't even stop at noon because when the operator goes to lunch I drive the machine myself.

apparatus to eight gangs which are scattered all over the city. Formerly four wagons were required to perform this work, and besides they were obliged to stay with the gangs all day because of the distance from headquarters.

"On each load the truck carries fourteen 2 in. galvanized wrought iron pipes which are 15 ft. long and mounted on iron wheels 8 in. in diameter," said J. M. Thompson, Deputy Street Commissioner and inventor of the apparatus. "On each unit," he continued, "a pivot discharge nozzle is fixed. Each unit weighs 125 lbs. or 1750 lbs. for a set. Besides this we load on the truck a hand sprinkler, three men and all sorts of tools, etc. This work the truck delivers between the hours of 4 A. M. and 8 P. M. After 8 A. M. it does its regular sewerage and complaint business duties, etc.

"This truck," he further added, "which averages about 55 miles a day, is a big money-saver. We are able to get 10 miles out of a gallon of gasoline and 33 miles out of a pint of oil. It has replaced five wagons and saves the Bureau just exactly \$13 a day. And besides it never complains of the heat or overwork."

All of the foregoing demonstrate that a truck can replace a one-horse vehicle and with profit to the owner. However, the best adapted to replace the one-horse vehicle is the 1000 lb. or lighter truck.



Buffalo's Method of Washing Its Streets

This flushing apparatus is hauled along from one street to another by means of a Stewart truck

Advertising appropriations bring greatest returns when expended in the CCJ

Use of the Light Truck Results in Marked Increase in Concern's Business

By C. W. SHAFER

REALIZING the necessity for rapid service in his business, Howard Baxter, of the Baxter Laundry Co., Grand Rapids, Mich., began five years ago to install light motor trucks in his delivery service. Carefully noting the exact performance of one truck for a year he computed the advantages. The figures were so gratifying that the company now operates a fleet of eleven light trucks and this number will be doubled within the next year.

In the adoption of the trucks two points were considered, one equally as important as the other—the quality of the work produced and the promptness of collection and delivery. It was apparent that in the case of all long hauls the truck could easily out-strip the horse in negotiating the service. This, too, was true with the short hauls, although not so emphatically. Consequently, with satisfactory work in the shop, and increased efficiency in service, a profit soon began to show. Instances of quick collection and prompt delivery were used in connection with advertisements. The city soon grew to know of this service and it was but a short time before the business of the company displayed a marked increase.

A number of problems confronted the company with the addition of the trucks, but all were eventually solved and a system was evolved which eliminated all unpleasantness.

Division Into Routes

Twenty-four regular routes are maintained and over considerable of this territory

NAME

ADDRESS

ROOM NO. or DEPARTMENT

INSTRUCTIONS

Michaelson

South Tonia at Island

Office

☒ SHORT TIME ORDER

☐ LAUNDRY

☒ DRY CLEANING

☐ PRESSING

☐ CLEANING ONLY

☐ REPAIRING

☐ HATS

☐ RUGS

☐ SHOES

☐ Pkg. Brought to Plant

SEP 15 2 40 PM 1916

SEP 15 2 41 PM 1916

SEP 15 2 41 PM 1916

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SEP 15 2 41 PM 1916

SEP 15 2 41 PM 1916

Figs. 1 and 2. Telephone Call Sheet

Fig. 1 represents the original and Fig. 2 the duplicate slips as made out when a 'phone call is received. The driver is then notified on his next communication with the office.

horse-drawn vehicles are utilized. They are, however, only for the slow, plodding work which has no call for speed. In the larger areas and in the remote sections the trucks are used entirely, while several are always held ready for an emergency call. In the regular collection work a schedule is employed which permits the trucks to go out in sets of two. The calls that are in at the time are given the driver for his section and he prosecutes them as fast as he is able. While en route, he is required to call in the office by telephone whenever he is able and he is then given any other call in the precinct that might have come in after he registered out. After completing the trip he is required to return and register in.

Telephone Calls

All calls are received over the telephone by a number of operators. With each call a slip (Fig. 1) with a duplicate (Fig. 2) is made out by the girl. On these the name and address and any special information in connection is written. Both of these copies are placed in the "New Call" file. On

Truck Record. Wednesday July 26			
7:30	8:05	8:25	9:10
Bob	Leo Smith	H. Dykema	
Sligh Furn.	329 Madison	211 No. Div.	
Michigan Chair	426 So. Coll	7 Barclay	
Luce Furn.	Mehrten's Apt.	Edwin's	
255 So. College	Bark's	The Herald	
957 Sheridan	46 So. Div.	Palldgre.	
615 Wincer Terr.	71 No. Paris	Land's	
	Mich. Ry. Co		
	230 Wade St.		
	Holmes		
	Jansons		
8:50	9:50		
317 No. Ott	Carother's	115 Thomas	
Bailey's		318 Pleasant	
214 Wurdock			

Fig. 3. Daily Truck Record Sheet

receipt of an inquiry from the driver the call is transmitted to him over the 'phone and the time of his query placed on the slip with a stamp. The copies are then separated, the original being placed in the "New Call" file again and the duplicate in the driver's file.

Upon receipt of another call from the driver he is asked regarding the call which was transmitted previously, and, if he has attended to it, the original is checked. In this way a check is made on every call until the driver reports in. On this report the slip is again time-stamped to show the time the call was picked up and is filed for future reference. The driver, on returning to the factory, checks over the calls he has made, with the duplicates, thus determining whether or not anything has been neglected. This is the double check against the service and renders any oversight abso-

lutely impossible. The special instructions on the slip are then noted and transferred to the proper department. The original slip is then used as the ultimate check and any possibility of error is eliminated.

All Calls Checked

On a large sheet (Fig. 3), presided over by a young woman, a record of every call made by the driver is tabulated. It shows the time that he leaves the plant, the location of his calls. As calls are received they are added to the list and when he returns his time is noted. Any unusual delay that he may report is set down and at night a recapitulation of all the drivers is made. This shows the total number of calls made and

Day Work Report		Wed. July 26	
First Trip		Second Trip	
Time	No. Calls	Time	No. Calls
Out In		Out In	
Bob 7:30 8:30	6	8:50 9:30	3
Leo Smith 8:05 9:25	10	9:50 10:10	1
Dykema 7:35 8:30	6	9:10 9:50	2
Lahan 8:25 9:25	2	9:30 10:30	4
Lewys 7:35 8:55	10	9:05 9:55	2

Fig. 4. Daily Work Report

the total amount of time used. From this is worked out the average time per call which gives the officials an absolute check against the movements of the drivers. In Grand Rapids the average is between nine and ten minutes. When these figures are exceeded an explanation is promptly asked for and if it is not forthcoming a rebuke is administered. The plan is always an incentive for the drivers to keep moving.

In addition to the above-mentioned slips a Daily Work Report is kept, shown by Fig. 4. This shows the time of departure and arrival of all drivers and the number of trips made. These daily slips are then filed away and kept for one year for reference.

With this system the Baxter Laundry, as it freely advertises to a profit, has not entertained a "kick" from a customer for years. The check is perfectly worked out and if a driver, by any chance, misses a call on his first round, he is apprehended immediately and ordered out to perfect it. With the "call-in" plan, however, few calls are missed, then only in instances where the summons comes while the return trip to the plant is being made. The system, Mr. Baxter believes, is applicable to any business the world over and can be used in connection with commercial organizations which now operate under different, but far from satisfactory, plans.

Horses Maintained for Short Hauls

Although horses are maintained by the Baxter company for the short-haul pre-

cincts, no comparison of costs is available. For an object of proof of the superiority of the light delivery trucks over the horse-drawn vehicles, however, this reasoning is used:

The speed of a horse is necessarily slower than the speed of the truck, by at least one-half. In the progress of a trip the



Special Body for Laundry

Mounted on a one-ton chassis, and designed to carry bulky light loads

time of the driver must be considered wasted. He is not producing for the company while en route. This time is valuable and if the waste is decreased one-half by the use of the truck the profit of the company is increased in proportion. This fact must always be taken into consideration by commercial institutions, especially those dealing in remote parts of a city. With this axiomatic profit forthcoming, and the fact that government statistics showing all cities growing away from the business districts, it is only fair to believe, Baxter believes, that light delivery trucks will be employed almost exclusively in the near future by all organizations except for short-haul work. In this respect the horse will always be superior because after the animal is trained it will make a route almost intuitively and the driver is thereby allowed to keep constantly at work while the horse responds to his whistle or call.

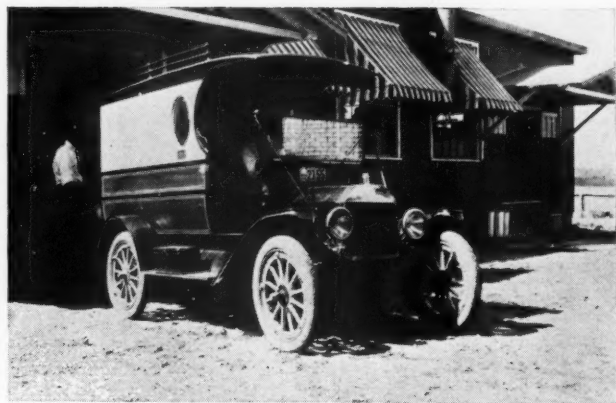
Trucks Kept in Good Shape

With the trucks the Baxter Co. finds it absolutely necessary to keep them in the best state of repair. In the bid for fast and reliable service a faulty machine cannot be used. Puncture proof tires are used exclusively and an extra wheel is always carried. The company's garage is maintained privately and skilled mechanics are kept constantly at work keeping the machines in repair. With this caution the percentage of possibility for a delay is practically nil.

Operations of the Baxter trucks are conducted in connection with large platforms, both with the laundry end and the carpet cleaning department. With the latter phase a great deal of care must be exercised so that the long, expensive rugs and carpets are not cracked in handling. For the pur-

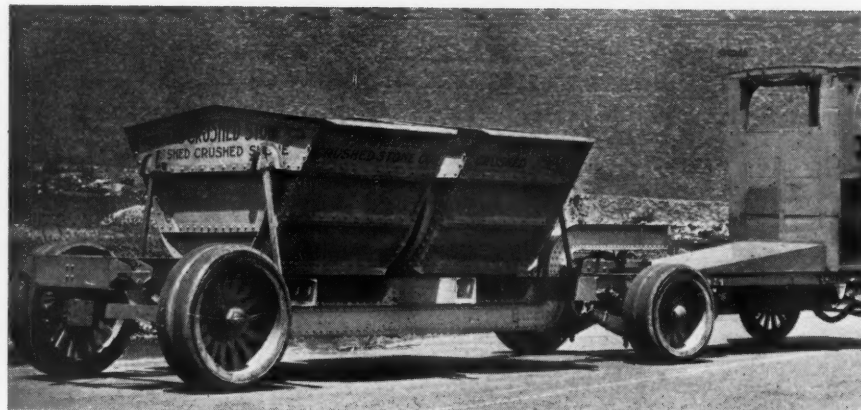
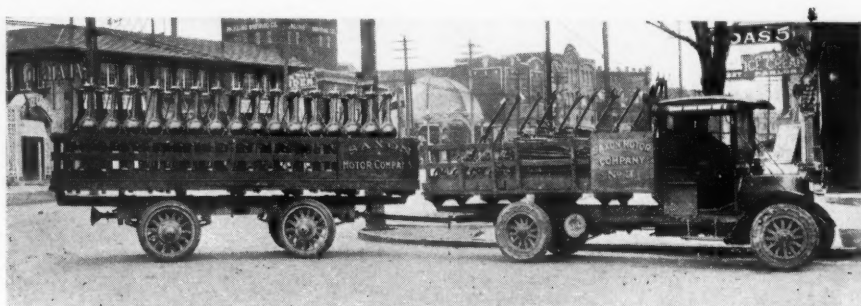
pose of obviating all possibility of injury to the materials low platforms have been constructed, over which long extensions to the truck floors slide easily. A heavy rug can thus be easily shoved into the truck and carried to its destination without a lift of any sort that might endanger it.

Mr. Baxter declares that his company has profited extensively by the use of the light delivery truck and it will be only a matter of a year or so before it will be used exclusively for everything but the short hauls.



Baxter Laundry Truck

Light delivery truck used by the Baxter Laundry Company, at the loading platform



Some Heavy-Type Trailers

The upper view shows a Troy trailer operated by the Saxon Motor Company, of Detroit. Truck alone hauls fifteen complete sets of axles and transmissions, and with the trailer it hauls forty-three sets. The middle illustration shows a bottom-dump Troy trailer in operation. The bottom illustration shows a Mack trailer, double side-dump type.

PROMPT DELIVERY AND REDUCED DELIVERY EXPENSE RESULT FROM THE USE OF THE LIGHT DELIVERY TRUCK

By C. W. SHAFER



BECAUSE the percentage of cost per delivery of a package is less when a light delivery truck is used instead of a horse-drawn vehicle, the Herpolsheimer Co., of Grand Rapids, Mich., the largest department house in Western Michigan, uses light trucks for everything but deliveries within five blocks of the company's building. Accurate records, kept over a period of four years, were used as a basis for computing the average cost, which, with this concern, is slightly less than \$.02 per package.

The nine trucks used by the Herpolsheimer Co. are operated on a fixed schedule. Loading is done at 8 and 10 A. M. and 2 and 4 P. M. A record of every package taken by the driver is kept, together with the time of proposed delivery. This record is also kept on a separate sheet by the driver and the time of actual delivery is then set down en route. The driver's sheet is later turned in for a check and the figures are kept on file for reference.

Among the precincts in fairly close proximity to the store the four trips a day are adequate. In the outlying districts but two trips a day are made. As the city continues to grow but one delivery will be made in the outskirts and for this purpose a 3 or 4-ton truck will be used. Before the heavy truck end is worked out extensively, however, more light trucks will be added for more deliveries in the other districts. This plan, the heads of the firm believe, is practical.

It was seven years ago that the Herpolsheimer Co. began angling with the light delivery truck. The first one was purchased during a hot month in summer. Several drivers reported in that their horses had been overcome while pounding along the hot pavements. Two valuable animals died as a result. It became apparent that, from both a humanitarian and a commercial standpoint, a change had to be made. Even though the horses were not overcome they were slowed down by the high tempera-

tures and the delivery service was seriously impaired. Customers made frequent objections and in a number of cases packages were refused when the delay was heavy. As a result trucks were purchased and the change for the better was immediately perceptible. No matter how hot the weather is now the deliveries are made consistently and a reputation for prompt and reliable service has been established. During the past hot summer, when Grand Rapids suffered some of the highest temperatures in the United States, not a comment was received by the firm regarding tardy deliveries. The fleet of ten trucks handled the business perfectly, whereas, if horses had been used, the results would have been so flagrantly "rotten" that a serious loss in patronage would have been sustained.

The Herpolsheimer Co. charges 20 per cent. of the cost of a truck every year against the truck. Each vehicle is given a separate account and in this is kept a record of every expenditure made for this truck. All repairs, tires and gasoline cost, salary of drivers, and every feature of upkeep is recorded.

At the end of the year the 20 per cent. is figured in with the rest of the expenditures. Consequently, in five years, the truck has paid for itself and whatever life

it may have over that period is clear for the company.

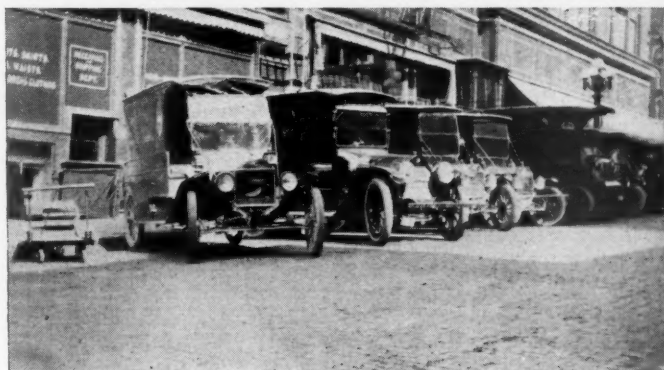
The Herpolsheimer Co. will always maintain a few horses for short hauls in the down town districts, but for any service outside of a point four blocks from the store the light delivery truck will be used. W. G. Herpolsheimer, head of the company, says that no commercial organization can operate without light trucks with any degree of success.

"Hard pavements kill horses," he said recently, "and all cities are growing. As they grow the pavements are expanded. Where we used to have a few miles of concrete and brick in the congested districts we now have pavements to the outskirts. Even the good roads of the rural districts are ruinous to horseflesh. The animals cannot stand the pounding strain. It wears them out and slows them up, eventually rendering them useless. The truck wears out too, of course, but by no means as rapidly as the horse. And this is true especially in the hot months. The horses simply cannot stand it and service then is utterly annihilated. With the light trucks the weather has no effect and the service goes on uninterrupted. In connection with any delivery system of any business the light truck has come to stay. It is an institution."



Eighteen-Ton Boiler Trailed by Three and a Half Ton Truck

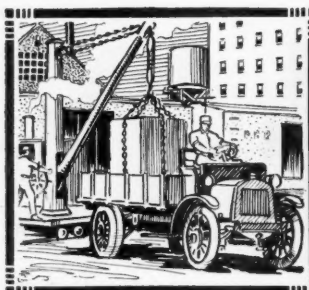
Demonstrating the ability of a truck to haul several times its rated carrying capacity, a three and a half ton Krebs equipped with a four-wheel trailer transported an eighteen-ton boiler without undue strain on the car or engine. This huge load was bulky and awkward as well as heavy, for it had a length of thirty feet, yet it was hauled in a day from New Haven to Bridgeport, Conn., with little difficulty. The truck shown in the illustration is one of a fleet of twelve owned by H. Goldman & Sons, of New Haven, who have handled heavy hauling contracts with success by making extensive use of trailers.



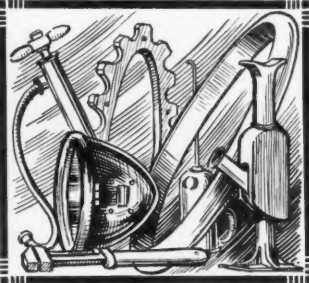
Herpolsheimer Delivery Fleet

This consists of light delivery trucks at the present, heavier trucks to be added later. On the left is a front view of the fleet, and on the right a view of the rear of the trucks, which are about ready to start on delivery

Everybody who is anybody in the truck industry reads the CCJ

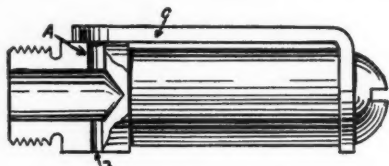


TRUCK ACCESSORIES AND APPLIANCES



THE GARDNER THERMOSTAT CARBURETOR

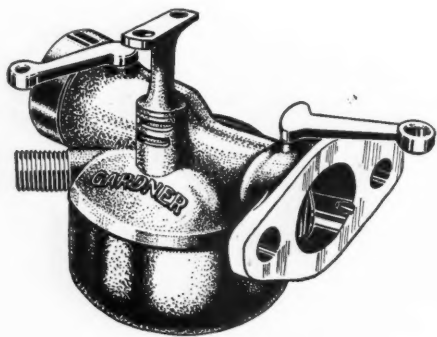
The basic principle of this carburetor, as its name implies is to control automatically by means of a metallic thermostat the correct mixture of gasoline and air at all temperatures. This thermostat is an integral



The Thermostat

This thermostat is submerged in the gasoline and its action is controlled by the temperature of it, and varies as the changes of temperature require.

part of the carburetor and cannot be conveniently reached by the driver, making it practically fool-proof. It is so constructed that a sufficiently rich mixture is provided for starting your cold engine, and as the temperature rises the mixture is thinned accordingly, thus maintaining at all times a perfectly balanced fuel. There are no needle valves or springs in this carburetor, and the principle of impregnated air or vapor gas is used. The maker claims that spark plug fouling is completely eliminated as the adjustment cannot be changed and the mixture at all times is sufficiently lean



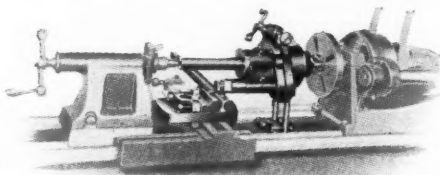
Gardner Carburetor

The thermostatic regulation is said to give more gasoline to start and automatically cuts off the gasoline as the engine warms up.

to keep them clean. It is additionally claimed to produce a mileage of from 24 to 30 miles per gallon on common commercial gasoline. The Gardner Thermostat Carburetor is distributed by the Gardner Carburetor Agency, 680 Woodward Avenue, Detroit, Mich. The price is \$10.

FOX LATHE KEYSEATING ATTACHMENT

Automobile repair shops and garages should be equipped to make new axles, drive shafts, etc., for automobiles. There are thousands of cars on the market for which new parts cannot be bought for the reason that a host of models have been discontinued and a number of factories have gone out of business. Jobs on axles and shafts requiring keyseating, squared ends and Woodruff keyways are numerous. The Sunderland Machinery & Supply Co., 1006-8-10 Douglas Street, Omaha, Neb., is offering the Fox Lathe Keyseating Attachment for lathes. This attachment is designed to mill and keyseat axles, drive shafts and other similar parts. It consists of a steel spindle provided with centers at each end. One end of this spindle has a flat spot for lathe dog, the other end is fitted with an oil cup for lubricating the tail stock



The Fox Lathe Keyseating Attachment

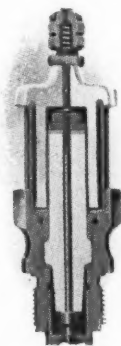
View from back of lathe with attachment in place. In this instance a partially completed job of cutting a Woodruff or half-moon keyway is well advanced.

center. A gear is mounted on this spindle and meshes into another gear, which is fitted on the driving end of the tool steel cutter arbor. Both spindle and cutter arbor revolve in a housing of gray iron. The bearings in the housing are bored straight and true to .001 in. and are ground to a high polish. These bearings are provided with oil grooves and large self-closing oil cups. The tool steel cutter arbor is 1 in. in diameter between the collars and will take care of different width cutters. The arbor is fitted on the end as a chuck and will hold standard size Woodruff or half-moon cutters. Both spindle and arbor bearings are provided with fibre thrust collars and adjusting screws. A worm segment is secured to the face of the main housing. This worm meshes with a feed screw, which is enclosed and held in place by a two-bearing cap. The feed screw is operated by a balanced ball handle. By turning this handle to the right or left the cutter is fed into or out of the work. The cutter may be locked in any position by a

tightening screw. The chuck for holding the work is of the plain square jaw type. The loose jaw can be swiveled for holding uneven or tapered pieces. The chuck base is dovetailed to fit the cross feed table and is secured to the cross feed screw nut by a screw. The chuck is fed forward against the cutter. It can be operated by hand or power.

RANDALL ROTARY POWER PLUG

This spark plug is constructed along an entirely new sparking principle, and is claimed to be an efficient and powerful firing device. It consists primarily of two principal parts, a pair of new spark terminals and an electrical device connected and operated with them. A removable spark chamber, having a conical tubular and knife-edged opening at the spark ends forms the one terminal. Centrally located within the opening and supported by the usual porcelain, is a cone-shaped projection forming the other terminal. Surrounding the external portion of the porcelain is a steel case containing the electrical device known as the condenser. The action of the



Randall Rotary Power Plug

Sectional view of the plug, showing the construction details. At the moment of explosion the Randall plug is claimed to give dozens of hot, whirling sparks.

condenser, considered with the new terminals, is said to transform the spark received from the magneto or spark coil into one of a widely different character. Because of the shape and relation of the terminals, a large number of sparks occur simultaneously around these terminals passing upward, around the central cone and inside of the chamber in a constantly rotating movement. The character and action of the spark produced by this plug is claimed to positively burn away oil or deposits which may in any way affect the pas-

sage of the spark. There is only one adjustment to be made and that is the process of cleaning, which is accomplished by giving the removable terminal chamber a quarter turn to the right and pulling it out. This chamber is locked with the old gun lock, which holds this chamber firmly in place. The Randall Rotary Power Plug Co., 460-466 Melwood Avenue, Pittsburgh, Pa., is offering the Randall plug at \$2 each.

ELECTRIC-GAS BRAZING TORCH

The Bantam Mfg. Co., of 64 Pearl St., Boston, has recently placed on the market the Bantam Electric Gas Brazing Torch, a portable outfit for soldering, heating, brazing, etc. The price is \$25 and the outfit includes a motor blower with 5 ft. of cord, switch and plug for electric circuit, 5



Bantam Brazing Torch

A ready-to-use device requiring no installation. Used for brazing, heating, soldering, etc.

ft. of air hose, 5 ft. of gas hose and one brazing blow pipe. It was designed to meet the general need of a torch around the shop and garage. It has a universal motor which will operate on 110 volt d.c. current, or 110 volt, 60 cycle a.c. current. This torch will produce a temperature of about 2400 degrees F.

MAJOR'S SPRING LUBRICATOR

A new device for lubricating and protecting automobile springs is being marketed by the Major Mfg. Co., 46 Pearl Street, New York City. It is known as Major's Spring Lubricator, and is made up of a felt lined covering, which is laced over the springs. The felt lining is well saturated with lubricating oil on an average of every six



Major's Spring Lubricator

Herewith is shown the lubricator as applied to a spring. The maker claims that this device aids in the even distribution of weight on the different leaves and thus averts the possibility of breakage, as every movement of the spring draws more oil between the leaves.

months. This is claimed to protect the springs from rust and improve the riding qualities of the car.

Prices per set of four range from \$12 to \$25, according to the requirements.

GARCO ASBESTOS BRAKE LINING

The General Asbestos and Rubber Co., of Charleston, S. C., are offering to the trade their Garco brand asbestos brake lining. They are also featuring a special type lining for Ford Transmission Bands, put up in rolls and in complete sets with rivets. Garco is solidly woven. Hundreds of brass wires are interwoven with the asbestos fabric and the whole is formed under pressure to the exact thickness required. It may be drilled for the insertion of rivets and permits counter-sinking as readily as does metal or wood.

The solution with which Garco is impregnated is manufactured under a secret formula and is claimed to retain the natural vitality of the asbestos perfectly. It is water-proof and dirt-proof and is not af-



Garco Brake Lining

This asbestos brake lining is claimed to resist wear, and contain a generous supply of material interwoven with the brass wire base.

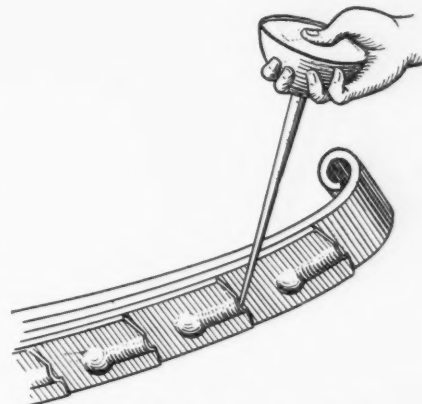
ected by the action of oil or grease on the brake drum. Garco affords braking surface down to the last fraction of an inch.

The General Asbestos and Rubber Co. have issued an interesting booklet describing Garco brake lining and their other asbestos automobile specialties, of which they manufacture a complete line. A copy of this booklet will be gladly sent on request.

STANLEY SELF-LUBRICATING SPRINGS

These springs are made by the Penn Spring Works, of Baldwinsville, N. Y., the selling agents being the Fulton Sales Co., of 910 S. Michigan Avenue, Chicago, Ill. These well-known springs are of high point carbon spring steel unless a special alloy steel is substituted where more desirable. All springs are carefully heat-treated in oil. The self-lubricating cups are claimed to eliminate rust and consequent settling. The oil cups are replenished by using an oil can to shoot a little

oil down the groove into the cup. The spring action draws the oil from the oil cups with a wicker-like action and is claimed to lubricate thoroughly. The oil



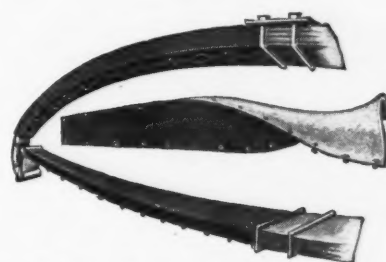
Stanley Self-Lubricating Springs

Oiling of these springs is accomplished by simply feeding a few drops of lubricant to the pockets in the leaves.

cups, which are at the ends of each spring leaf, contain felt mats which require lubricating but two or three times a year.

THE WOODWORTH SPRING COVER AND LUBRICATOR

The Woodworth Spring Cover and Lubricator shown in the illustration is intended not only to lubricate the springs, but also to prevent moisture and dirt from getting into them. It is claimed by the manufacturer that this device gives better results than any other spring lubricator on account of it preventing dirt and moisture from counter-acting the effect of the lubricant. The Woodworth Spring Cover and Lubricator is a covering which completely covers all openings between the leaves of the springs. It is laced over the spring with the lacing underneath and has an inside lining of felt wicking which is saturated with oil before the cover is put on. The covers are laced on through hooks much



Spring Cover and Lubricator

This device lubricates the spring leaves and as well prevents the formation of rust.

like shoe hooks, so that they can be put on very quickly, and if laced smooth they make a neat appearance. These Spring Covers and Lubricators are made in different sizes for different makes of cars and the cost is comparatively low. The Woodward Spring Cover and Lubricator is made by the Leather Tire Goods Co., of Niagara Falls, N. Y.

Merit wins—that's why the CCJ is the leader

FLEXIBLE CARBON SCRAPERS

The Flexible Carbon Scraper Co., 717 South Olive Street, Los Angeles, Cal., is offering a line of new carbon scavenging tools, known as the Flexible Carbon



Flexible Carbon Scrapers

The flexibility of these tools enables the man using them to reach all remote corners of the combustion chamber and remove all carbon deposits.

Scrapers. These tools are made from oil tempered spring steel wire, in two sizes, three tools and a spoon to the set. No. 1 is adapted to small bore engines, and No. 2 is a standard size, adapted to the larger engines. Sets 1 and 2 sell for \$1.50. In addition to the above, the company manufactures a special carbon scraper, which is described as being a single tool shorter in length and adapted to removing carbon from pistons and cylinder heads of engines where the head is removable. This tool sells for \$.50.

BENFORD'S GOLDEN GIANT SPARK PLUG

The Benford Mfg. Co., Mount Vernon, N. Y., is offering a full line of Benford's Monarch Spark Plugs. A recent addition to this line is the Golden Giant. In order to distinguish this plug the maker has specified a 22-K gold plated shell. This feature,



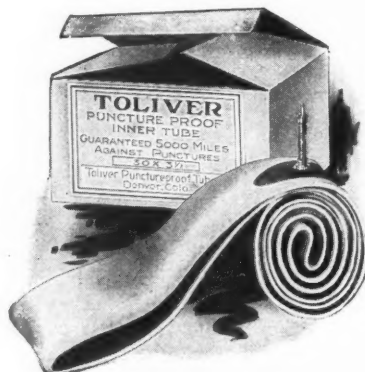
Golden Giant Spark Plug

A 22K. gold-plated shell and a special non-burning sparking wire are features of this accessory. It is claimed that by generating intense heat with each explosion, the power of the engine is increased and uneven ignition is eliminated.

guish this plug the maker has specified a 22-K gold plated shell. This feature, coupled with the blue adamant insulator and non-burning nickel alloy sparking wire, combine to make the plug distinctive in appearance and forms the basis for the claims of satisfactory service. Benford's Monarch Golden Giant sells for \$1.

NEW PUNCTURE-PROOF TUBE

The Toliver Puncture Proof Tube has many points that will appeal to the motorist who dislikes to be held up with punctures. It is made the same as other tubes but is puncture proofed by the Toliver Secret Process and is absolutely guaranteed by the maker for 5000 miles of service without a puncture—they are used just like



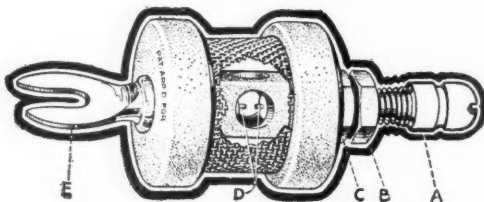
New Toliver Tube

The maker states that this tube will run for five thousand miles without puncture

regular tubes and are inflated with air in the same manner. Complete details and prices may be had by writing the Toliver Puncture Proof Co., Denver, Colo.

P. S. E. PLUG ENERGIZER

This device attaches to the spark plug in the engine and the maker states will increase the power, speed, and gives a greater economy in running. This device operates on the principle of electricity by which a broken circuit causes the current to seek the next gap. This device has standard con-



P. S. E. Plug Energizer

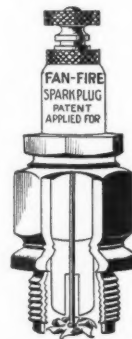
Attaches to the spark plug and is said to greatly improve the running of the engine

nectors, insulating cones on each end and brass wire gauze as used in Davy's miner lamp. This latter feature is claimed to absolutely fireproof the spark; also allows free passage of air through the device, which is said to prevent oxidation, and also makes a dark chamber within which the spark can be readily seen. This device is made by the P. S. E. Mfg. Co., of 1777 Broadway, New York City, price \$1.

Clete Mulick has become assistant branch manager of the Minneapolis territory of the Studebaker Corp., succeeding L. C. Stevenson. His most recent connection with the Studebaker Corp. has been as block salesman and assistant manager at San Francisco and Portland, respectively.

FAN-FIRE SPARK PLUG

A radical departure from the pressed type of spark plugs is found in the "Fan-Fire," which is claimed to have a number



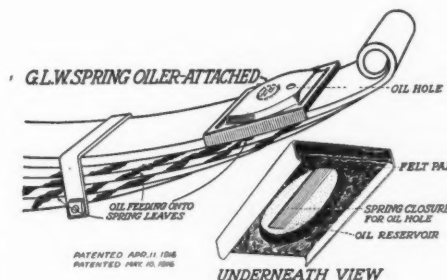
Fan-Fire Spark Plug

This drawing shows the turbine fan mounted on the center rod. The maker claims this fan to be self-cleaning, as the blades throw off oil and soot deposits.

of practical advantages. This plug has a turbine fan loosely mounted on the center rod. The compression and explosion of the engine causes the fan to rotate rapidly. From the extremity of each fan blade hot sparks are delivered to the bushing. This provides a larger sparking area. The plug is sturdy and durable in construction. It is manufactured by the Fan-Fire Spark Plug Co., Yonkers, N. Y., and lists for \$1.

G. L. W. SPRING OILER

The G. L. W. Spring Oiler Co., 11 and 12 Grant Bldg., 1038 Fifth Street, San Diego, Cal., is manufacturing a new leaf spring oiling device known as the G. L. W. Spring Oiler. This oiler consists of a rust proof metal case and a felt pad. When snapped over the main leaf of a spring it is said to form an oil reservoir for lubricating oil. The metal case is so constructed that different degrees of pressure are brought to bear on the felt pad, making the ends per-



G. L. W. Spring Oiler

The low price and ease of attachment are features of this oiler. It is attached by snapping it over the main leaf of the spring and is held in place by the inherent spring of the metal.

fectly tight and oilproof, keeping the top of the main leaf clean. At the side the pressure on the felt is such that it permits a very slow seepage of oil, which fills the grooves along the side and underneath surface of the spring. The G. L. W. Oiler retails at \$.20 each.

BAKELITE MICARTA-D GEARS AND PINIONS

A non-metallic gear material, which is said to possess mechanical strength and withstand severe stresses without increasing the width of the face of the gear to abnormal limits, has recently been put on the market by the Westinghouse Electric and Mfg. Co., of East Pittsburgh, Pa., under the name of Bakelite Micarta-D.

This is a product of heavy duck bonded together with Bakelite by heating while under an enormous pressure. It is as strong as cast iron, is unaffected by atmospheric changes, is vermin proof, and can be stored indefinitely without shrinking or other deterioration. It can be used for gears that have to operate in oil, without any signs of swelling. In most cases neither bushings or shrouds are required, as the material is self-supporting. Where, however, the requirements are unusually severe or where the diameter of the gear is several times the width of the face, end plates may be advisable, but even in such cases the teeth need not be shrouded, and the width of the gear is determined only by the power to be transmitted.

In the non-metallic gears formerly used, in which the teeth were shrouded, it was necessary to make the width of the face of the non-metallic material equal to the width of the face of the mating gear plus the aggregate end play of both shafts; otherwise the shrouds would mesh and the gear would be noisy. In order to fulfill this condition it was necessary to specify a greater width than would be necessary to transmit the required power. This is unnecessary with Bakelite Micarta-D gears. In fact, it is advisable that the width of the face of these gears be made the same or less than the mating gears in order to insure uniform pressure over the entire tooth. Because of this fact Bakelite Micarta-D gears can be utilized for many special applications, as for instance, a 2 in. face pinion meshing with a 7 in. face flywheel.

The amount and character of the noise of gears as they mesh depends primarily upon the character of the material from which the gears are made. This noise indicates vibration, a great destructive agent, and indicates loss of power and wear and tear on the machinery.

Non-metallic gears must be hard enough to wear well, must not shrink or swell from oil or moisture, nor deteriorate from storage. The teeth too should be able to withstand the service requirements without metallic reinforcement of their ends, so that the two mating gears can be made of equal width of face to obtain uniform wear over the entire wearing surfaces of both. A non-metallic gear is quiet in operation and will outwear many classes of metal gears. It is also slightly elastic and will absorb shocks that otherwise would result in broken teeth or severe vibration.

Bakelite Micarta-D machines readily takes a good polish, machining best at high speed and with plenty of rake to the tool. It can be machined in any direction and drills and taps readily. The same tools are used as for steel when cutting teeth, but an increase in cutting speed of 25 per

cent. and an increase of feed of 50 per cent. may be used. A small pinion or large bore gear can be manufactured readily. At present this material is not made in thicknesses over 2 in. Hence, when gears having a face of more than 2 in. are required, two or more plates of Bakelite Micarta-D must be riveted together, using metal and plates or standard washers under the rivet heads.

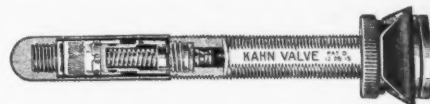
Bakelite Micarta-D material has a tensile strength, parallel to laminations of 10,000 lbs. per square in.; a compression strength of 30,000 lbs. per square in. perpendicular to laminations, and of 17,000 lbs. per square in. parallel to laminations; a transverse strength of 17,000; a coefficient of expansion per in. per degree Centigrade, of 0.00002 in. in the direction parallel to laminations and of 0.000085 in. in the direction perpendicular to laminations. It has a specific gravity of 1.4, weighs 0.05 lb. per cubic in., and has a water absorption of 0.25 to 2 per cent. by weight, depending upon the relative amount of edge surface exposed. Shrinkage and oil absorption is practically zero.

The long life of gears of this material has been proven under the most severe service conditions and in a large variety of applications, such as timing gears for automobiles, and other machinery. Automobile timing gears can usually be made from solid plate. In case it is necessary to have a web gear, in order to allow for clearance, it is preferable to use a metal hub and web, only the teeth and rim being made of non-metallic material. Spur, bevel and helical gears should be used in mesh with metal gears, and in order to operate satisfactorily both gears must be cut true, lined up accurately, and properly spaced between centers. The allowance for back lash should be about double the usual allowance for steel. Lubrication of Bakelite Micarta-D gears is essential. Any good lubricating oil or grease will answer, but there should be plenty of it. Rough or worn teeth of mating gear or bad alignment will cause vibration and rapid wear. Gears made of Bakelite Micarta-D can, in general, be substituted for steel, cast iron or bronze gears, and with the same dimensions as the metal gears which they are to replace.

ARMSTRONG TUBES EQUIPPED WITH KAHN VALVES

The Armstrong Rubber Co., 118-122 Adams Street, Newark, N. J., is putting out a complete line of Armstrong Tubes fitted with the new Kahn Valve. These tubes are made of heavy pure gum, red rubber, laminated. The Kahn Valve, which is supplied with all Armstrong tubes, involves the combination of an automatic pressure regulator and an air-tight valve. By means of a knurled collar the predetermined pressure in the tire is fixed by fitting the projection on the collar into one of the five slots marked respectively, 50, 60, 70, 80 and 90 lbs. The pump hose is attached in the regular way and air is pumped into the tire until a whistling noise

is heard. This gives warning that the desired pressure has been reached and the check valve has been closed, due to the opening of the blow-off valve. All air coming from the pump will now pass outside through the blow-off ports. The construction of the valve seat in the Kahn valve is practically the same as in other valves, with the exception that the rubber joint for inserting the valve stem has been entirely eliminated. This valve seat is claimed to be absolutely air-tight.



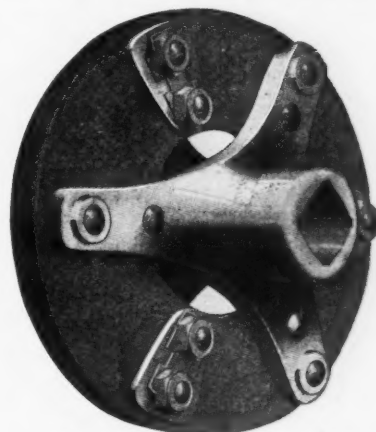
The Kahn Automatic Valve

The above illustration shows the Kahn valve partially sectioned. The valve is made in two parts to allow for the removing or replacing of the valve stem and to allow for assembling of the parts when in the process of manufacture.

The pressure in the tire may be determined at any time without the use of a gage. This is accomplished by setting the collar for the required pressure and placing the finger firmly over the top of the valve. This pushes down the valve stem and opens the main valve. For example, if 80 lbs. is required the collar is set at 80 and the valve is pushed down. If the valve does not whistle it indicates that there is less than 80 lbs. in the tire. The collar is then set back to 70 lbs. and the operation repeated. If the valve now whistles it indicates that more than 70 lbs. is being carried. Armstrong Tubes fitted with Kahn Valves sell for \$3.05 for the 30 x 3 in.; \$3.60 for 30 x 3½ in.; \$3.75 for 31 x 3½ in.; \$5.20 for 32 x 4 in.; \$5.30 for 34 x 4 in.; \$5.70 for 36 x 4 in.; \$7.10 for 36 x 4½ in.; \$8.20 for 36 x 5 in.; \$8.30 for 37 x 5 in.

FLEXITE UNIVERSAL JOINTS

To fill the demand for a powerful joint at a very moderate price F. R. Blair & Co., 50 Church Street, New York City, is putting out the Flexite Universal Joint, which is claimed to be free from the troubles of wear and lubrication. The construction is very simple. The joint consists of two



The Flexible Universal Joint

The absence of wearing surfaces does away entirely with lubrication and is said to make the joint absolutely silent in operation.

Make your product pay—advertise in the CCJ

spiders and a flexible member to which each spider is fastened independently. The spiders are drop forged and machine finished, being bored in each case to specification. The discs are composed of rubber, sea island cotton fabric and a reinforcement, the latter so disposed as to reinforce the structure at the point of greatest strain. The whole is vulcanized under hydraulic pressure to form a tough, pliable, weather and wearproof member, which is said to be capable of withstanding a torque load several times greater than can possibly be applied to it. In order to avoid the possibility of transmitting the torque load by direct pressure the connecting bolts against the sides of the holes in the discs, the faces of both the spider arms and of the friction plates, lying between the bolt heads, are roughened. The discs are gripped between the jaws of a vise formed by these members, and the torque is transmitted entirely by friction grip. The use of two bolts for each spider arm distributes the strain uniformly over the whole friction area. The support which the Flexite design gives to the whole width of the disc insures the maximum radial strength and keeps the joint concentric under heavy vibration. Flexite joints are made in 3 sizes—6½, 7½ and 9 in.

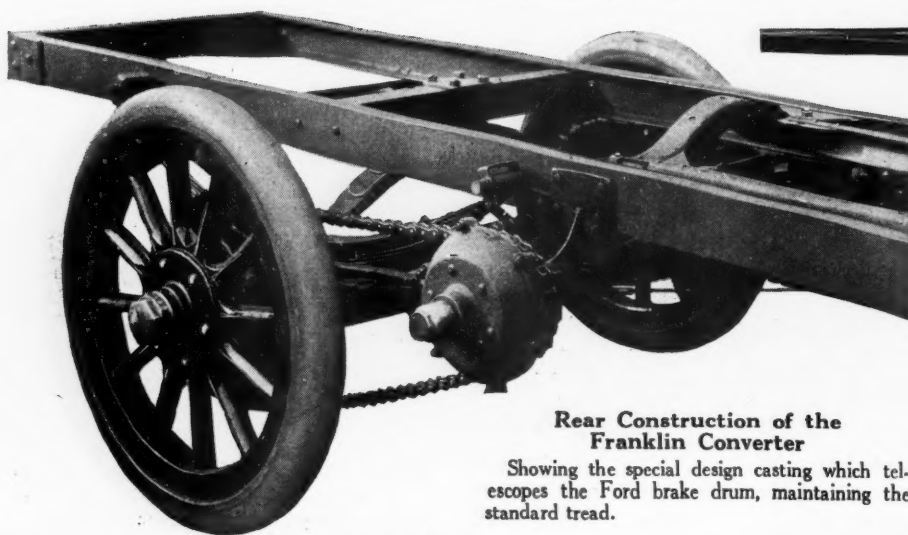
THE FRANKLIN TWO-WAY CONVERTER

The Franklin 2 Way Converter Co., Herald Bldg., Chicago, Ill., has recently announced a new chain drive converting unit. The Ford rear axle is used as a jack-shaft and remains unaltered, the axle ends being supplied with special belt-sprockets which telescope the Ford brake drum. This maintains the standard tread of 56 in. The 4 in. channel steel frame telescopes the regular Ford frame and reinforces it.



The Franklin Two-Way Converter

This view shows a complete assembly of the Franklin converter and Ford chassis, making a complete one-ton truck.



Rear Construction of the Franklin Converter

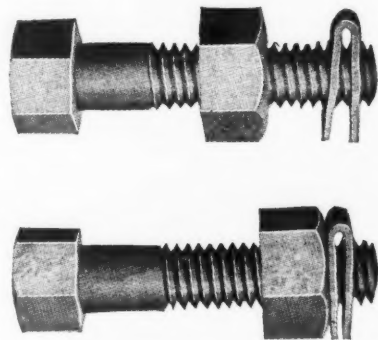
Showing the special design casting which telescopes the Ford brake drum, maintaining the standard tread.

The 2½ x 1¾ in. heavy duty axle is carried on semi-elliptic springs 2½ in. wide. A helper cross-spring is provided to care for heavy loads. Wheels are artillery type, 32 x 3½ in. truck type, fitted with solid rubber tires guaranteed for 8000 miles. Drive is Baldwin roller double chain, 1-in. pitch. Gear ratios, standard, approximately 7.25 to 1 on high speed, 18 to 1 on low speed, 28 to 1 on reverse. Sprockets, 23 to 48, insuring minimum wear and noise. Weight, approximately 1000 lbs. unattached. Tread, 56 in.; wheelbase, 127 in.; loading space, 8 to 9 ft. length, 32 to 60 in. width, depending on load and body. Capacity, 2000 to 3000 lbs.; price, \$345.

THE SPRING NUT LOCK

The Spring Nut Lock is an invention that is claimed to make it impossible for a nut to drop off the bolt on which it is fitted. It also holds the nut securely at the point placed. No matter how great the vibration of the machinery may be, the nut cannot budge from its position. The Spring Nut Lock, in effect, makes the nut as stable and as safe as a rivet, with this important advantage over the rivet; the lock and nut can be quickly and easily removed at any time and repeatedly used, with no injury to the bolt thread. The Spring Nut Lock consists of two octagonal plates of thin steel stamped out of one piece, leaving a joint on one of its eight sides. Circular holes to fit the required size of bolt are punched in each plate, and the plate is then bent over un-

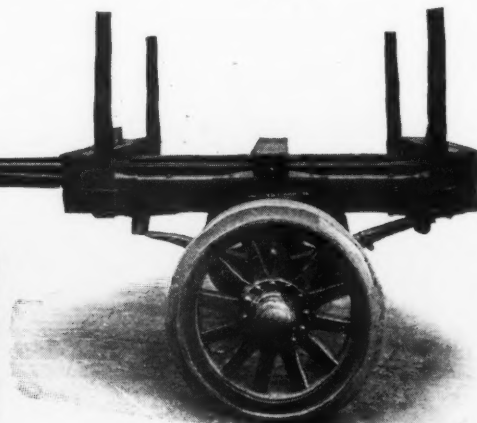
til the two holes are almost parallel with one hole overlapping the other hole by a fraction of an in. The joining side acts as a hinge, and after being tempered, as a



The Spring Nut Lock

The upper view shows the Spring Nut Lock loosely applied on bolt before being set in place to hold firmly until removed. The lower view shows the lock tightened against the nut. In this position it is said to prevent the nut from being shaken off and will follow the nut tightening against the material.

powerful spring. When the lock is slipped on the bolt and both legs engage the thread of the screw, the holes in each of the legs are brought into alignment. Here is where the spring gets in its work. Because of this forced alignment of the holes the spring exerts a pulling force on one of the legs, and a pushing force on the other leg. As a consequence the leg on which the pulling force is exerted engages the valley of the threads only on the side of the bolt farthest from the spring, while the leg on which the pushing force is exerted engages the valley of the threads only on the side of the bolt that is nearest to the spring. Tightened into place next to the nut, these opposing holds have the tendency of a vise. The Spring Nut Lock Co., 608 S. Dearborn Street, Chicago, Ill., is marketing these locks and is now turning out in quantity the sizes most generally used.



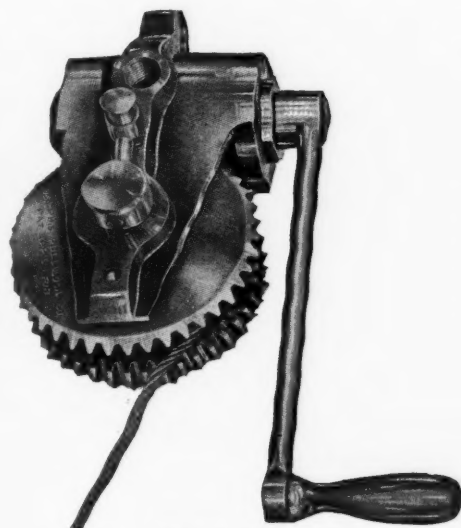
Ohio Two-Wheel Heavy-Duty Trailer

This is one of the many styles of trailers built by the Ohio Trailer Company, of 51 Doan Avenue, Cleveland, Ohio. Its use is principally for hauling long lengths of iron piping, poles, etc. This outfit is rated to carry three tons, and when used in connection with a two-ton truck can easily take care of a five-ton load. It is fitted with an extension bar, which when fully extended is 20 ft. long, and when closed up, 14 ft. in length.

For its readers—information; for its advertisers—results. That's the purpose of the CCJ

THE PULLBLOCK

The Memphis Pullblock Co., 356 Monroe Ave., Memphis, Tenn., is offering the Pullblock for pulling, hoisting and extricating cars from mud holes, etc. This device is described as being a new development in worm gearing, giving a combination of worm wheel and cable drum in one-piece. The crank is demountable and the frame is of one-piece construction. The worm operates against a ball thrust bearing, reducing friction to a minimum. The eccentric wheel shaft body is 1 in. in diameter and worm wheel teeth $\frac{3}{8}$ in. base. By turning the crank right or left, forward and reverse action is secured. The pull is self locking in any position owing to the worm gear construction. When it is necessary to reel off cable, the small lever on one side of the



The Pullblock

Showing the simplicity and compactness embodied in the design. The worm-and-gear construction makes the device self-locking in any position.

frame is moved to the downward position, disengaging the gears and allowing the cable drum to idle. The maker claims that 10 teeth are engaged simultaneously with the threads on the worm, thus increasing the factor of safety. The Pullblock, chain, cable and special stakes sell for \$15 complete.

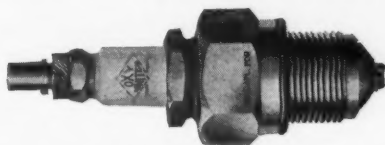
LAKESIDE CONVERTIBLE ATTACHMENT

The Lakeside Motor Truck Co., Westminster Bldg., Monroe and Dearborn Streets, Chicago, Ill., is putting out the Lakeside Convertible Attachment, which is offered for the purpose of converting Ford cars and other makes of pleasure cars into serviceable one-ton trucks at the lowest possible cost. The attachment is described as being so constructed that it can be attached or detached with a monkey wrench in an hour's time, no expert mechanic or machine shop being necessary. The Ford rear axle is used as a jackshaft without cutting or altering in any way. A pair of new steel

wheels with dirtproof enclosed sprockets and chains provide the final drive. The wheels are carried on a special heavy steel axle and a pair of heavy duty springs; solid rubber truck tires are supplied as regular equipment. Gear ratio is reduced 6 to 1 with a speed of 12 to 18 m.p.h. under full load. A brief review of the specifications follows: Carrying capacity, 3000 lbs.; wheels, Lakeside special heavy duty steel, 34 x 4 in.; drive, internal Baldwin chains, heavy roller type, $\frac{5}{8}$ in. diameter, $\frac{5}{8}$ in. wide; tires, Goodyear solid rubber, 34 x 4 in., pressed on type; axle, heavy steel, 1 $\frac{3}{4}$ in. diameter; springs, semi-elliptical, 2 $\frac{1}{2}$ in. wide, 42 in. long with spring hangers, shackles and spring seats. Brakes—powerful emergency on rear wheels; gear ratio on sprockets—10 teeth on jackshaft sprocket, 22 teeth on large sprocket; tread, standard 56 in. from center to center of wheels; loading space, 6 to 8 ft. back of driver's seat. The Lakeside Convertible Attachment sells for \$235.

THE OXY-IGNITER

The Oxygenerator Co., 1919 S. Michigan Ave., Chicago, Ill., is offering the Oxy-Igniter Spark Plug for use in all makes of cars. The porcelain of this plug is enclosed entirely by the outer shell. The chamber, therefore, is said to be free from carbon and cannot short-circuit. The electrode terminates in four points and circuit is completed by the shell which is tapered. The plug may be taken apart readily and



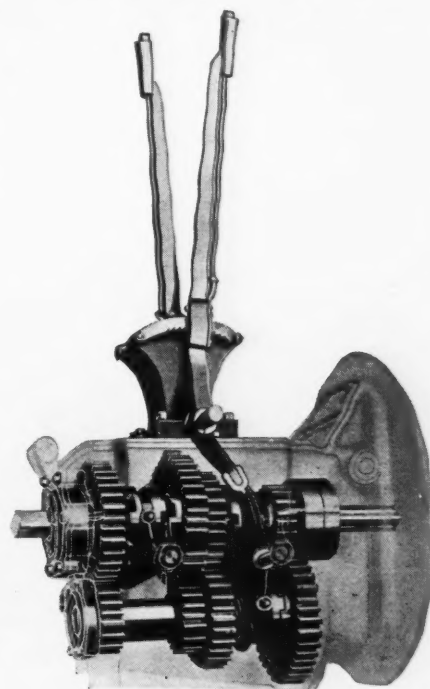
The Oxy-Igniter

In this spark plug the porcelain is enclosed by the shell and the electrode terminates in four points, so that one or all spark at the same time.

all parts are replaceable. It is claimed to be sootless and is designed to increase the efficiency of the engine and eliminate spark plug troubles. The retail price of the Oxy-Igniter is \$1. Special prices are quoted on sets of 4, 8 and 12.

THE COTTA TRANSMISSION

The Cotta Transmission Co., Rockford, Ill., is offering the new U. P. P. transmission for trucks. The principal features are Borg and Beck clutch, various speeds obtained by use of jaw clutches by which any one of the gears may be locked to the shaft, and on direct or high speed the countershaft and main shaft gears do not

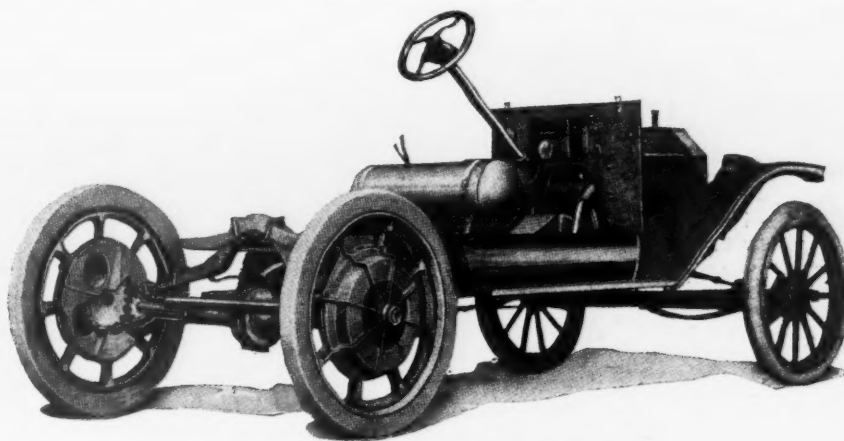


Cotta Transmission

Herewith is shown a phantom view of the U. P. P. transmission

rotate, the members of the main shaft being locked together, while the main shaft revolves inside the gears on roller bearings. When any other speed is used the countershaft is automatically engaged and the desired speed picked up by the sliding clutches.

Long life and positive reliable action are claimed for Cotta transmissions owing to the gears being always in mesh.



The Lakeside Convertible Attachment

The above illustration shows a Ford chassis fitted with the Lakeside attachment, ready for the springs and body. A portion of the chain housing on the left rear wheel has been cut away revealing the Baldwin chain drive.

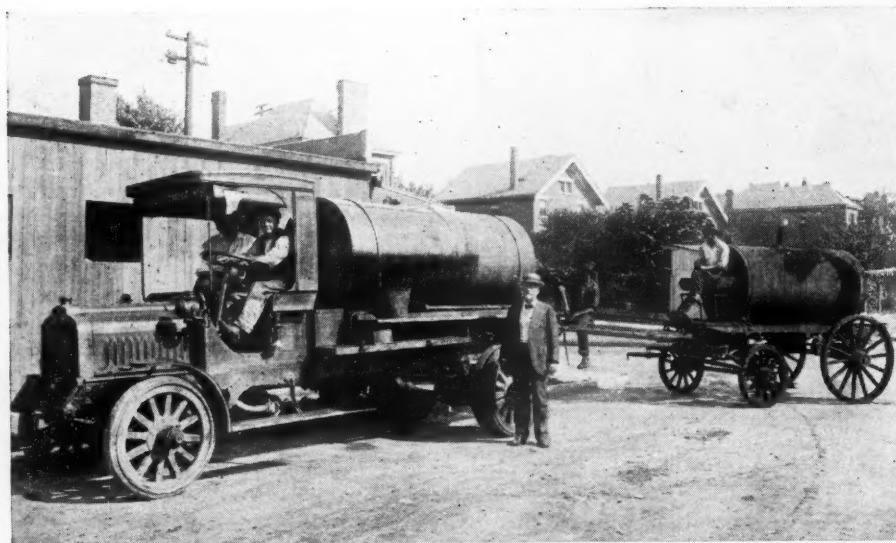
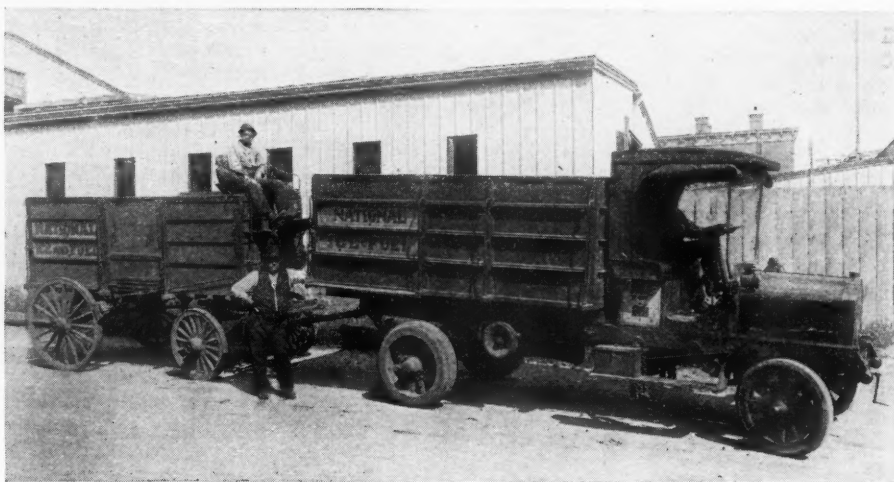


Trailer Hauls Three and a Half Tons and Truck One and a Half Tons

The Dennis Sheen Transfer Company, of New Orleans, La., in hauling cotton makes use of two Kelly-Springfield one and a half ton trucks, and two trailers. As seen in the illustration, each outfit carries 15 bales of cotton, each bale weighing 500 pounds. The truck carries only its rated capacity, the remainder of the weight resting on the trailer.

Four-Ton Truck and Trailer Used for Ice and Coal Delivery

The National Ice and Fuel Company Cincinnati, Ohio, uses the truck illustrated, with wagon trailer, for ice delivery to its substations, wagons and large dealers within a two-mile radius of plant, during the summer time. In winter, coal body and hoist replaces ice body, and truck is used for delivery of coal. The truck, which is an old four-ton United States Chain-Drive Model, carried $4\frac{1}{2}$ tons of ice on truck proper and another $4\frac{1}{2}$ tons in trailer. This truck is manufactured by The United States Motor Truck Company, Cincinnati, Ohio.



United States Trucks Deliver Oil, Hauling Trailer as Well

The three and a half ton worm-drive model shown herewith carried tank body weighing 1600 lbs., 200 lbs. less than maximum allowance made by The United States Motor Truck Company, of Cincinnati, Ohio, manufacturer of United States trucks. This body had a capacity of approximately 1000 gals., and an average load of 6500 lbs., to be conservative, was carried on the truck proper.

The trailer was attached by means of drawbar; also manufactured by The United States Motor Truck Company. The trailer weighed 3000 lbs. and carried about 4500 lbs. of oil. Thus the three and a half ton United States truck carried 6000 lbs. above its rated capacity for the summer, without a layup. The three-ton chain drive delivered proportionately heavy service. These two trucks hauled and delivered nearly 2,000,000 gals. of oil during the last few months in Southern Ohio and Northern Kentucky.

Storage Company Uses Smith Form-A-Truck and Martin Fifth-Wheel Combination

The illustration shows one of two outfits built by the Gustav Schaefer Wagon Company, of Cleveland, Ohio, for the Lincoln Fireproof Storage Company, of the same city. This combination consists of a Ford power plant fitted to the Smith Form-A-Truck attachment. Over the rear axle of the latter rests the van, being supported by a Martin Fifth-Wheel Attachment. The total load of this equipment including the load in the van was 14,790 lbs. The axle under the van is equipped with Timken roller-bearing axle and rubber-tired wheels.



Heavy Hauling by Tractor in Chicago

By WALTER A. BERMINGHAM



FOR heavy capacity motor trucks to be used in hauling loose material, sand, gravel, lime, coal, cement, or anything dumpable, the Chicago market has been making rapid progress in ousting the heavy draft horse, but for the hauling of commodities of great weight the ten or twelve-horse team owners are now becoming convinced of the economy of motor power over the horse, through practical demonstrations of the tractor.

While truckmen readily admitted the superiority of the motor and that their horse equipment can be sold to advantage, that fact did not apply to their heavy vehicle equipment. That meant an actual loss as buyers would be few, if any. The tractor has come to the relief of the situation by utilizing the apparently obsolete vehicles for a limited period at least.

A short time ago the Pennoyer Merchants' Transfer Co., of Chicago, handlers of very heavy hauling problems, owing to the scarcity and high prices of draft horses, decided to try out for themselves the question of whether or not a motor driven tractor could be successfully adapted to their work and make them any money over horse methods.

For this purpose a Model 35 Knox tractor was purchased and put into their regular service with instructions to the boys to see if they could substitute it on jobs that would ordinarily require from six to twelve teams of heavy horses to handle.

One of the first propositions to come up after the delivery of the tractor was the hauling of two boilers, to be delivered 10

miles beyond the city limits over country roads and placed in a green house. These boilers weighed $8\frac{1}{2}$ tons each and were mounted on running gear that would weigh approximately 5 tons for the two pieces of equipment. The accompanying illustration will show how this proposition was handled in a businesslike way by dropping the front gear on the forward wagon and setting the fifth wheel on to the carrying platform of the tractor, which is especially designed for this kind of service. The trip was made without incident, the only difficulty encountered being the necessity of reducing the speed to less than 5 m.p.h. on account of the construction of the wagons, which would not stand the heavy loads at high speed, as they were built for slow horse service. Arriving at the green house the rear boiler was dropped and the first one placed inside a very difficult passage-way without trouble. The tractor was then returned and coupled onto the second wagon, placing it also where it was desired, the whole trip from start to finish being made without the use of horses to assist in any way. The total weight of this load was 22 tons.

A few days after this the Pennoyer Merchants' Transfer Co. contracted to deliver from the Santa Fe yards at 14th and State Streets to Clark and Adams Streets, Chicago, several generators weighing 35 tons each, mounted on wagons weighing 8 tons. The tractor easily handled this load without ballast of any kind, the accompanying illustration showing one of these generators en route to the point of delivery. The total weight of the load handled was 43 tons and one which would have required from

ten to twelve teams of horses to move it, besides taking all night to finish the job. The tractor handled it without apparent effort. Upon arriving at Clark and Adams Streets, in the heart of the "Loop" and center of traffic congestion, it was found necessary to place the generator nearer to the building than the tractor could pull it, owing to the limited space. The tractor was backed behind the wagon carrying the generator and pushed it into place with a few of the men steering the tongue, much as an elephant pushes a circus wagon out of the mud.

Operation Costs of a Knox Tractor

The following distribution of operation costs of a Knox Tractor is furnished by S. K. Johnson, Chicago District Manager, Knox Motor Associates.

Chassis Price	\$4500.00
Trailer	1200.00
	<hr/> \$5700.00

Fixed Charges

Item 1. Interest on $\frac{1}{2}$ total investment at 6 per cent. yearly	\$156.00
Item 2. Amortization at 20 per cent. yearly (\$5700 less \$2000) yearly..	740.00
Item 3. Insurance (accident and liability damage)	75.00
Item 4. Driver at \$18.00 per week yearly	900.00
Item 5. State license, yearly..	6.00
Total yearly	\$1877.00
Daily (300 days)	\$6.25

Mileage Charges

Item 6. Upkeep (renewals, labor for renewals and yearly overhaul) at per mile	\$.03
Item 7. Gasoline \$.21 per gal., 3 miles to gal. at per mile .....	.07
Item 8. Lubricating oil (motor, transmission, cup grease, etc.) (cylinder oil \$.50 per gal., 90 miles to gal., etc.) at per mile .....	.01
Item 9. Tires, per mile .....	.05

Total per mile	\$.16
Total daily fixed charge—30-mile, \$6.25; 40-mile, \$6.25; 50-mile, \$6.25; 60-mile, \$6.25; 70 mile, \$6.25.	

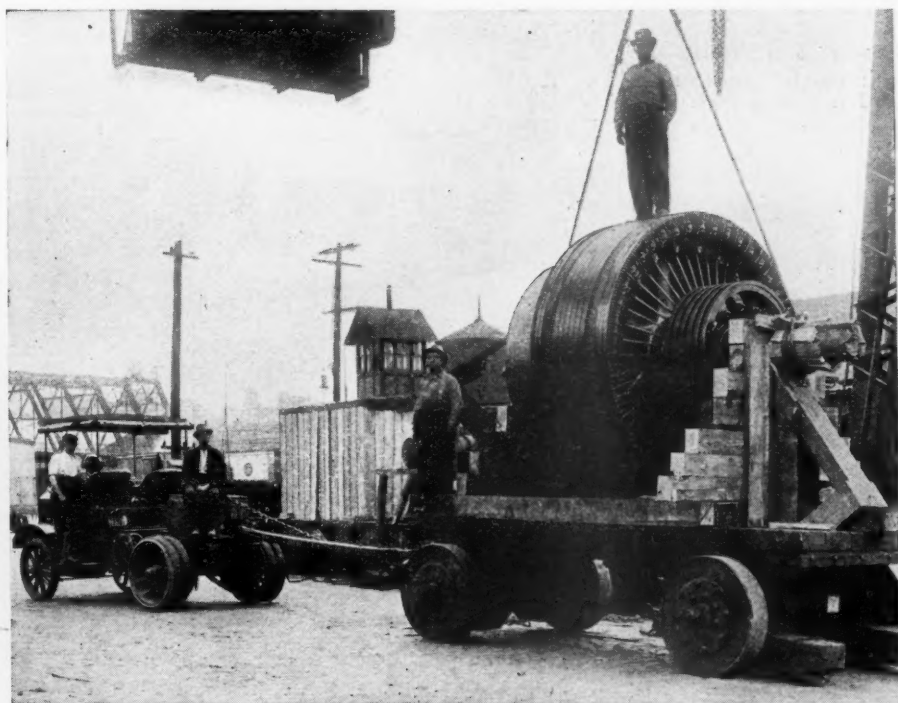
Total daily mile charge at \$.18 per mile—30-mile, \$4.80; 40-mile, \$6.40; 50-mile, \$8.00; 60-mile, \$9.60; 70-mile, \$11.20.	
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Total for both charges—30-mile, \$11.05; 40-mile, \$12.65; 50-mile, \$14.25; 60-mile, \$15.85; 70-mile, \$17.45.	
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Explanation of Operation Cost Charges

Item 1. Interest—This is charged on one-half the total investment yearly only, as the investment is being withdrawn by the amortization charge.

Item 2. Amortization—A stated amount is laid aside each day as a sinking fund, this amount being sufficient at the end of five years to equal the total original in-



Knox Tractor Hauling Huge Generator on Trailer

This illustration shows a Model 35 Knox tractor hauling a huge generator, weighing forty-three tons

Interesting and helpful information; reputable advertisements—that's the CCJ

vestment, with the exception of the stated amount, which sum can be readily obtained for the tractor after five years' service, providing the repairs, etc., have been promptly made as provided for by the "up-keep" charges.

Item 3. \$75 yearly is the insurance premium necessary to protect the owner against all claims for liability and for damage to the amount of \$1000 in any one collision by the tractor with other property.

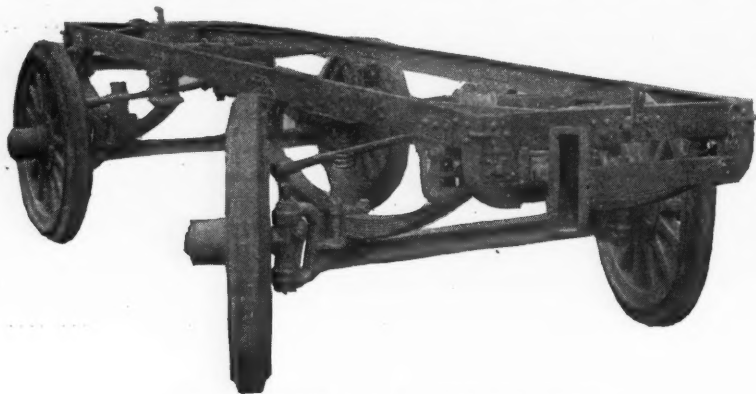
Item 4. \$18 per week will secure the services of a competent and steady driver.

Item 5. The State Tax License is \$6 per annum.

Item 6. Upkeep. A charge of \$.03 per mile is a more than liberal estimate for providing for renewals, labor for the installation of same, etc., including the yearly overhaul. At 50 miles daily, this item provides yearly \$450. This amount is more than sufficient for ordinary wear and tear renewals.

THE TROY TRAILER MADE IN VARIETY OF SIZES

Troy trailers, made by the Troy Wagon Works Co., of Troy, Ohio, need very little introduction. This company is a pioneer



Troy Model 212—Two and a Half Ton Trailer

This trailer is fitted with 36 in., heavy artillery wheels, mounted on Bower bearings. The axles are drop-forged steel. The springs are 3 ft. 10 in. long, 3 in. wide

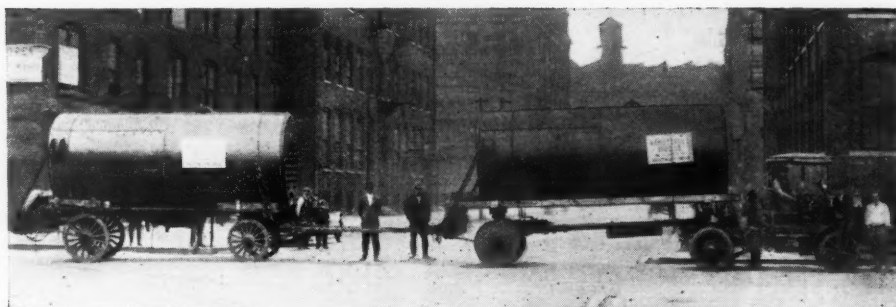
in this line of endeavor and as a result has been manufacturing a line of trailers that meets all needs. Troy trailers are built in all sizes from 1 to 5 tons. The accompanying illustration shows the two-ton model.

In this trailer, wagon design and construction are entirely eliminated. Throughout the trailers are built of steel and bronze, with wood only used for the wheels.

Two features which make this trailer distinctive are the specially designed draw-bar head and a steering mechanism.

The draw-bar head is telescoping and is fitted with a spring that compresses in both pulling and pushing. This prevents jarring the truck engine in starting or stopping.

The draw-bar operates a special type of steering mechanism that makes the trailer track right in the same line as the truck or as the trailer ahead of it. This enables the trailer to travel through narrow passages and turn sharp corners without leaving the truck's path.



Knox Tractor Hauling Two Eight-and-a-Half-Ton Boilers

These boilers and trailers amounted to a load of twenty-two tons. These were hauled beyond the city limits and ten miles into the country

Item 7. Gasoline—At \$.21 per gal. and 3 miles to a gal. makes these charges \$.07 per mile, etc. This is an accurate average for winter and summer service.

Item 8. Lubricating Oils—Such as cylinder oil, transmission gear oil, machine oil,

cup grease, etc., will cost approximately \$.01 per mile.

Item 9. Tires—This charge is based on the 7000 mile guarantee which is the standard guarantee of the different tire manufacturers.

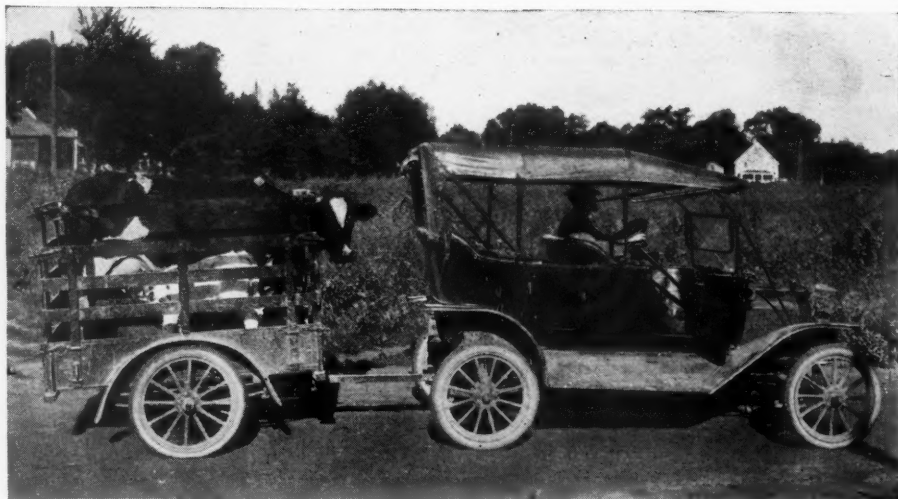
The wheels are always parallel to the line of traction. This saves power by preventing side thrusts in rounding corners. Most important, it keeps the trailer from whipping.

The pull is through the frame only.



George Delker Trailers

The Geo. Delker Company, Inc., of Henderson, Ky., manufactures a one-half ton two-wheel trailer, the features of which are the 44 in. wide body and the Timken roller bearing axles. The body dimensions are 72 x 42 x 8 in. It has hardwood sills, 5 in. flareboard, and drop end-gate. Springs are six leaf, 1½ in. semi-elliptic. Timken bearings are 1¼ in., and wheels are 1½ Sarven with 1¼ in. solid rubber tires.



Stock Buyer Finds Trailer an Asset

Herewith is shown W. W. Plumb, of Beloit, Wis., with trailer used for hauling his stock to market. He claims to do about five times the work with the trailer, and asserts the trailer was paid for in three days.

The CHILTON ideal—honest circulation; results to advertisers—fully exemplified in the CCJ

The Caterpillar Tractor as an Armored Car. Its Remarkable Work at the Front



THERE has been considerable in the papers recently concerning the armored motor cars and what they have been doing on the battle fields of Europe. Very little has gotten into print concerning the remarkable work of Caterpillar tractors, or "tank" cars, as they are called, such as are made by the Holt Mfg. Co., of Peoria, Ill., for farming purposes. These Caterpillar tractors, as usual with this type of machine, run on endless belts fitted with plates which are corrugated on the under side and which come in contact with the ground. These plates are carried by endless belts or chain driven over toothed wheels, there being about 7 ft. in contact with the ground on each side of the car. This gives tremendous supporting surface and ability to cross ditches, bogs and other obstructions; in fact, the ground pressure is only about 3 lbs. per sq. in., where a 30 in. track is used, which is less than the pressure under the foot of a man or horse. This makes it possible for them to run through muddy ground or places where the ordinary truck or tractor would sink, although they weigh in the neighborhood of 18,000 lbs. apiece. Several of them in recent encounters have traveled directly across trenches, in some cases straddling the trench where they remained stationary, sweeping the trench in either direction with their machine guns, literally mowing down the entrenched men.

It is claimed by those who are familiar with the work of the Caterpillar armored cars that in the very first engagements those operated by the English did more damage, killed more men and really had more influence on the war than all the Zeppelins since the beginning of hostilities.

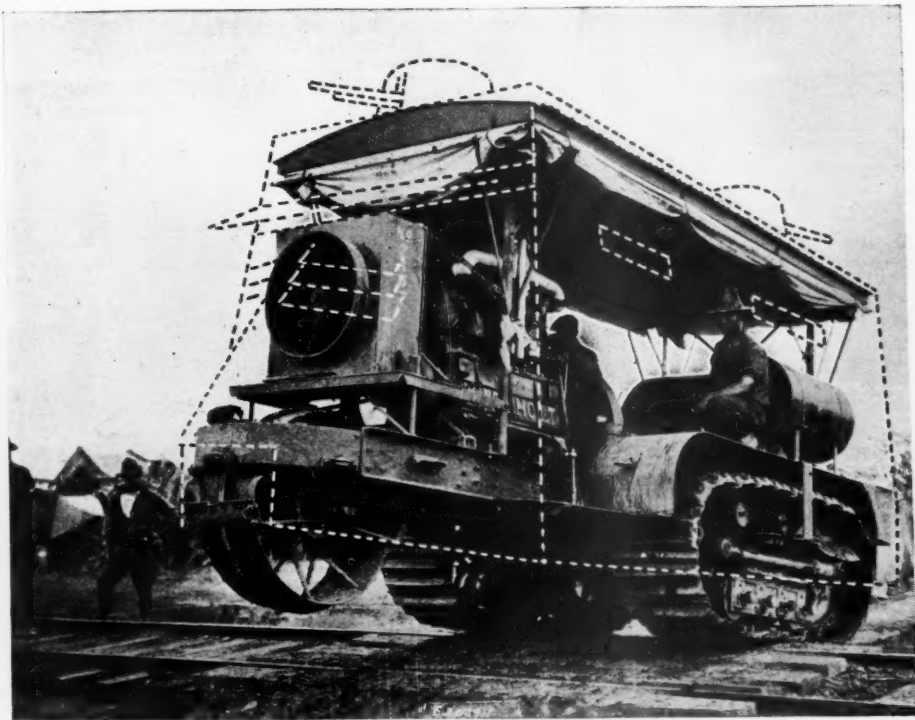
The tractors are driven by 120 h.p. gasoline or oil engines and run on steel tracks which are carried in short sections on the inside of the endless belts; in other words, the rear wheels of the tractor never touch the ground, but operate on steel rails which

are laid by the endless belts as the deadly machine advances. A well known tractor manufacturer, of Peoria, Ill., sold to the British Government a thousand of these Caterpillar tractors and the same firm also sold a good many to Russia and France. Before their introduction as armored cars by the English they were used extensively for hauling heavy guns through marshy places, as they can cross almost any kind of ground. They are so balanced that the front wheel can be jerked into the air, allowing the caterpillars to negotiate the ob-



A Monster Tractor and Trailer Outfit

Showing a Holt "Caterpillar" and "Caterpillar" trailers. It will be noticed that the trailers are also fitted with the "Caterpillar". This outfit is especially useful where soft and loose ground has to be traversed



Armored Caterpillar Tractor or "Tank"

These nine-ton armored monsters are based on the Holt tractor chassis, built by the Holt Manufacturing Company, of Peoria, Ill. The armor plate and gun equipment have been supplied by the English. The drawing shows the general arrangement of the armor cut away to show the caterpillar.

struction. It is understood that the United States Government is now experimenting with some of these for armored cars.

Mechanical Details of Caterpillar

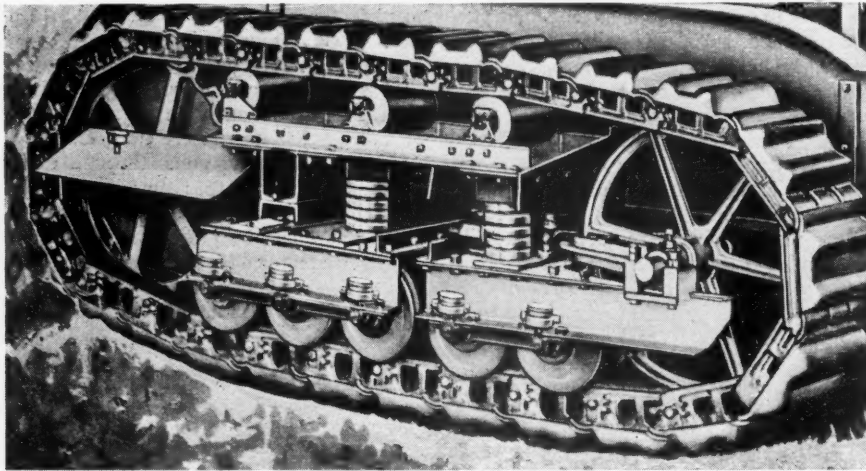
The tractors are fitted with 6 in. bore by 7 in. stroke; valve-in-head 6-cylinder engines; 45 brake h.p. at 600 r.p.m. The metal track upon which the wheels run is 13 in. in width and 80 in. in length on the ground. Ignition is K. W. gear driven, high tension magneto.

By a special construction, the tractor can be turned in its own length by the operation of a hand lever and pedal. The Caterpillar track is a flexible, endless belt, composed of steel links, connected by case-hardened steel space blocks and case-hardened steel track pins. Each link combines a corrugated ground contact shoe and a double rail over which the truck rollers travel. The shoes are provided with curved ends which overlap each other, so there is never any opening between them for dirt and mud. These shoes are made very heavy to withstand severe usage and are therefore very durable, especially as there is no friction between them and the ground. The track is merely laid on the ground and picked up again one section at a time as the rollers have passed over it. This track has a face $2\frac{3}{4}$ in., giving a wearing

Everybody who is anybody in the truck industry reads the CCJ

surface equivalent to that of the ordinary railroad rail. They are 6 in. high and have openings at the side so that the dirt falling onto the track is forced out through the openings by the teeth of the track-driven sprocket. The track pins are of high carbon steel, case-hardened, prevented from side movement by a head at one end and

long life to these wearing surfaces. These are mounted on high carbon heat-treated gudgeons fitted with long phosphor bronze bearings, each well lubricated. The hubs are counter-bored to receive washers which are ground to exact size. These washers act as thrust bearings and prevent dust, sand and dirt from getting in. In



Close View of the "Caterpillar"

Note the massive shoes which are simply laid down and picked up again one at a time. These shoes are 18 in. wide standard size, and for special work are made 30 in. wide

a keeper pin in the other. This method of joining the links provides inexpensive and easily replaced parts to take the wear. With special 30 in. width tracks, the total bearing surface is 4,800 square in., and the ground pressure is only 3 lbs. per square in. There are 5 truck rollers on either side provided with chilled faces, giving

addition to this there is a second set of dust washers or fenders which go over these first washers, to absolutely exclude all dirt and grit from these bearings.

The roller truck frame carries five truck rollers and the front idler on each side of the tractor. This frame is built in two sections which are hinged to each other.



The Holt Tractor in Use by "Uncle Sam," at the Border

This illustration shows one of the Holt tractors, as used by the United States Government, at the border, in hauling wagon trains. The character of the surface over which this train is being hauled is clearly shown. Nothing but a Caterpillar could travel over such soft ground and still pull a train after it. It is understood that the instigator of the use of this tractor as armored cars in Great Britain was Winston C. Churchill. Many of these tractors are in use in this country for farming purposes.

The rear section carries three truck rollers and the forward section two truck rollers and the idler. This arrangement insures smooth travel and extreme flexibility, allowing the track to conform itself to the unevenness of the ground and to get a good hold on the toughest surface. The front idler is held in place by a forked thrust rod, having a screw adjustment by which the idler may be moved forward or backward as necessary to maintain the track at proper tension.



Defiance Trailer No. 4

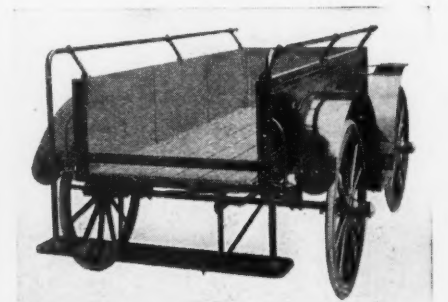
The Defiance Carriage Company, of Defiance, Ohio, is the maker of the trailer illustrated, as well as other sizes; also four-wheel trailers. The body is 7 ft. x 42 in. x 20 in. Sideboards are removable. It has Sarven patent wheels, Concord axles, and steel or rubber tires. Can also be had with 1 1/4 in. Timken axles.



The Boston Trailer

This illustration shows a two-wheeled Boston trailer made by the Boston Trailer Company, of 36 Bromfield Street, Boston. Two-wheeled models are made in from a half to five-ton sizes, and up to twelve tons in the four-wheeled type.

The bearings are Timken roller, and treads are standard. Model 02, the smallest, at \$55, has 1 1/4 in. half patent axles; 32 in. wheels with steel tires; and oak frame; inside measurements being 72x44x12 in. Larger models have solid rubber tires and Timken bearings.



Miami Fire Department Trailer

This illustration shows the rear of the special fire department trailer made by the Miami Trailer Works, Troy, Miami County, Ohio. This latest addition to this concern's line is claimed to have wonderful possibilities for small town fire protection. It will carry a 45 gallon chemical tank, 500 feet of water hose, and is equipped to carry two 24 ft. extension ladders.

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TRUCK TIRES

Special Body and Trailer for Hauling Bricks

By C. P. SHATTUCK



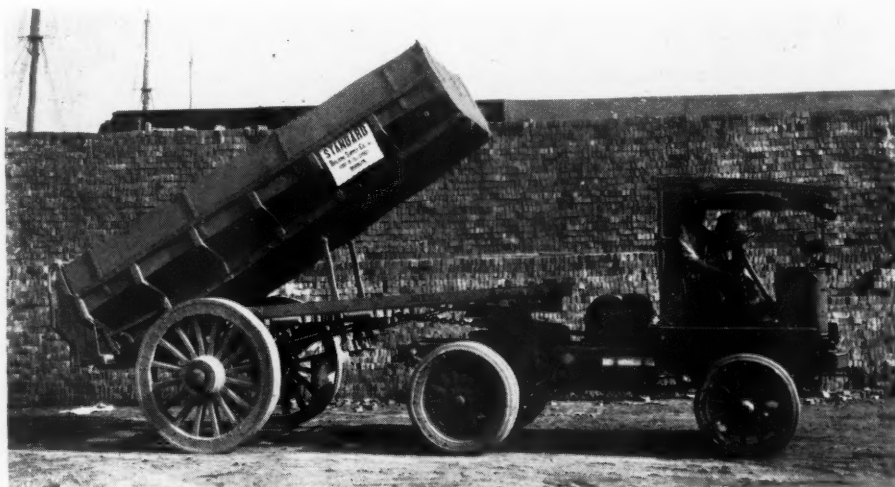
THE wonderful growth of the truck industry may be said to be largely due to the possibilities of economy afforded by the greater speed and larger capacity of the motor vehicle. The constantly increasing demand has developed a new field, that of the special body, one that can be quickly loaded and unloaded, and specially adapted for the particular service in which it is to be used. Reference is not made to the conventional forms of quick discharging bodies, but rather to those designs which require the services of the efficiency engineer or a specialist. The designing of these bodies as well as the mechanical operating apparatus is, as a rule, expensive, and for this reason the average business concern is not inclined to make an investment. He is more likely to stipulate that his particular problem be solved and the finished product demonstrated to its satisfaction before placing an order.

A salesman of the R. E. Taylor Corp., New York City, eastern distributors for the Garford line of commercial vehicles, was confronted by a special body proposition in his attempt to interest the Standard Building Supply Co., Inc., Brooklyn. This concern was interested in commercial cars provided they could be shown that the truck could handle brick more efficiently and economically than with horse drawn vehicles. The loading, transportation and unloading of this material not only requires considerable manual labor but because of weight of each brick (a brick weighs about 4 lbs.) there is more or less waste through breakage. The conventional types of dumping bodies are not practical in the work as to dump a large load of bricks the body must be elevated at such an angle that the load will dump freely and easily.

The problem was solved after much experimentation and tests by adapting a special form of semi-trailer of 10-ton capacity

to a 10-ton Garford truck. The body was constructed by the Shadbolt Mfg. Co., Brooklyn, which specializes in such work, while the winch, which is the interesting feature of the hoisting and lowering, is the invention of Samuel Stimmel, 5 Bedford Street, New York City, who built and tested the winch which was adapted to the Van Dorn mechanism which is utilized by the Garford Co. with its standing types of

the Garford hoisting system, the lever being located at the right of the driver just in back of the gearshift lever. This control lever enables the driver, and without leaving his seat, to partially or fully raise or lower the body. This lever and its connections, also the rod which automatically stops the action of the winch when the body is fully raised or lowered, are shown clearly in the accompanying illustrations.



Trailer Body Hoisted to Its Maximum Position

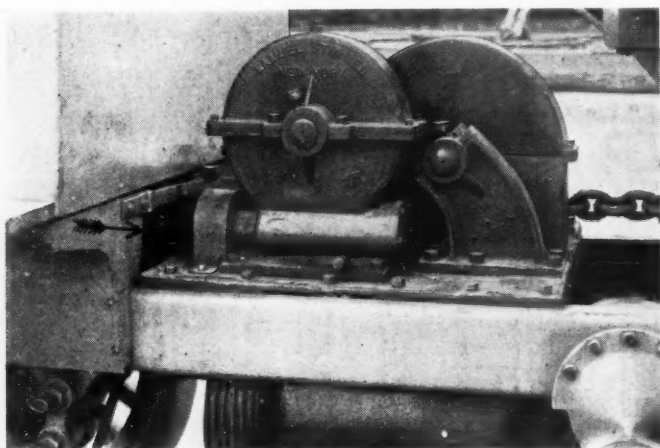
The body is raised six feet or at an angle of forty-five degrees, which is necessary to dump the load cleanly. Control is by a lever just in back of the gearshift lever. The winch winds a chain attached to the pivoted arms.

hoisting bodies. There were several problems to be solved in the construction of the winch, and one of these was to obtain a gear reduction of 750 to 1, as the drum of the winch makes but one complete revolution in either hoisting or lowering the trailer body.

The operation of the winch, which, of course, is actuated by the energy of the engine, is by the same lever as is used with

In designing the winch it was necessary to take into consideration the weight of the load, 10 tons of brick and the weight of the body plus the friction, which proved to be about 12½ tons. It was found by experimentation that to dump the load cleanly that the trailer had to be elevated 6 ft. at its front end or at an angle of 45 deg.

The method of elevating the trailer is shown in an accompanying illustration, that



Left-Side View of Stimmel Winch

Illustrating how a gear reduction of 750:1 is obtained by a worm and gear and spur gears. The chain drive from sprocket on shaft is shown at the left of the worm shaft, and is indicated by an arrow.



The Stimmel Automatic Winch

Semi-top view, showing the drum of winch, the lever operating a camlike device which automatically throws gears driving the winch out of mesh when body attains maximum elevation, etc.

Merit wins—that's why the CCJ is the leader



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Device That
Has Made
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It can be operated from the transmission, from any rotating part of the motor, or from a front wheel, and will control either the vehicle speed, or the engine speed, as desired.

There should be a PIERCE GOVERNOR on your truck.

Pierce Governor Company
Anderson, Ind., U. S. A.

with the body empty and elevated. A pair of arms pivotally mounted in a vertical plane to the trailer body are connected by a substantial bar carrying a large eye. As may be noted these arms are free to swing backward and forward so in case the bar should encounter an obstacle in the road it would swing backward or forward. The lifting is accomplished by means of a chain, one end of which is hooked into the eye in the bar, while the other end is attached

small gear which are slidingly mounted on a shaft above the universal sprocket. When the body attains its maximum elevation or lowest point, a cam arrangement so actuates the first named lever that it throws a sliding gear out of mesh or in neutral. This is automatically performed. Control of the sliding gears is also manual, as previously explained.

Owing to a difference in the size of the sliding gears, the body is lowered much

of a pair of bolsters that are bolted to the side frame members of the chassis, and on these is mounted the lower half of the turntable, a circle of heavy steel carrying a large steel cone that is located above the centre of the truck's rear axles. The upper part of the turntable or cup is secured to the frame of the trailer, being supported by transverse bolsters. Front and rear bolsters carry a longitudinal shaft so arranged that it has a slight longitudinal movement. Helical springs surround the shaft and are so located against the bolsters that all shocks of starting and stopping are absorbed by these springs. The transverse and longitudinal shafts are so arranged that inequalities of road surfaces are compensated for. As the cone of the turntable is large it makes for easy turning as well as a convenient coupling.

The trailer was thoroughly tested before being accepted by the Standard Building Supply Co. and it transports 10 tons, or 5000 bricks. The entire load can be dumped in one minute and the brick can be deposited in piles along the front of a building as required. In testing the efficiency of the truck trailer a record was kept of the costs, and it is stated that it costs 50 cents a thousand bricks as compared with \$1.36 by the former or horse-drawn methods. It is estimated that the period of hauling brick is about 160 days the year and on a basis of eight loads a day, which was accomplished by the trailer, the machine would haul 6,400,000 brick, which would, according to these figures, effect a saving of over \$5,000 a season.

The Standard Building Supply Co. has three general stations from which it hauls its bricks to the buildings in the course of construction. By utilizing two or three of these trailers and loading the empty ones while the truck was delivering, the earning capacity of the truck would be considerably increased. Not only does the semi-trailer afford a greater load capacity, but it reduces transportation costs materially, especially in the metropolis, when congested traffic is governed by regulations more particularly adapted to the slower moving horse drawn vehicle.



Semi-Trailer Solves Brick Transportation Problem

Novel dumping body operated by a special winch enables Garford truck to dump load in one minute without driver leaving the seat. The special body permits of a capacity of five thousand bricks or about four times a greater load than with a two-horse team. Note the pivoted arms attached to the center of the trailer body.

to and winds over the drum of the winch. To obtain a direct or lifting pull on the centre of the bar and to compensate for any tendency of the chain to exert a horizontal movement caused by the chain winding on the winch drum, two large pulleys or idlers are employed. These are placed in a horizontal plane on the cross member of the frame of the trailer. The chain passes between these pulleys and any tendency of the former to move to the left or right is taken care of. These pulleys are approximately 10 in. in diameter and about 4 in. wide.

The reduction alluded to was obtained by means of a double gear, a worm and gear, and spur gears. The initial drive is from a sprocket in back of the universal joint just ahead of the gearset, the energy being conveyed by a chain to a sprocket keyed to a shaft carrying a gear in mesh with the worm shaft. The worm and gear reduction is 40:1, and all gears are enclosed and operate in a bath of oil. The shafts supporting the worm gear and spur gears are lubricated by grease cups. The winch is bolted to a plate, which in turn is bolted to the frame of the chassis as shown in the plan view of the mechanism. The automatic stopping of the drum is obtained by a lever connected to a yoke which in turn is connected to the yoke that shifts a large or

faster than it is raised. The lowering is obtained by a reverse arrangement of the gears much in the same manner as the reverse of a motor vehicle is obtained.

The body or trailer can be dumped from any angle and this is possible through the use of the Shadbolt fifth wheel, which also couples the trailer to the truck. It consists



Martin Semi-Trailer Used in Connection With Ford Runabout

The Estes Lumber Company, of Birmingham, Ala., reports that with the above trailer outfit it can deliver as much stock in one day as it could with three single teams. They not only get better service, but find that they are saving a great deal of money. On one day this firm delivered twenty-eight different orders over a distance that it would have taken six teams to cover in the same space of time.

THIS TRAILER IS UNIQUE

A trailer for use as an ambulance for horses is operated in connection with a one-ton Garford chassis by the Massachusetts Society for the Prevention of Cruelty to Animals. In getting an injured animal into the ambulance, the low clearance of the trailer is a great advantage. This one is only 15 in. above the ground, while the floor of an ambulance would have to be twice as high or more, if placed on top of the chassis of a gas propelled car. This vehicle is provided with an end gate, which when lowered forms a skid, and a horse that is able to walk can enter without difficulty by using this inclined plane. If the animal is down, a rolling platform is used, which is provided with a pillow and devices to hold the creature securely. When properly attached, the horse and platform together are drawn into the ambulance by means of a wire cable operated by a worm and gear winch in front.

This outfit is the product of the Monahan Vehicle Co., of Providence, R. I., and has many special features. The wheelbase is very short for the sake of strength, traction and ease of turning in narrow streets or courts. Protection for the driver is assured by a cab with side and rear lights, a windshield and curtains for stormy weather. The animal is sheltered by a top and by curtains on the side of the ambulance. The engine is a four-cylinder Garford type, worm drive, high tension magneto. A swivel connection between tractor and trailer allows for motion in every direction. The tires are solid for the trailer and pneumatic for the tractor. Other equipment for the trailer includes canvas slings to pass under the animal's body and hold it upright, while taking the weight off its injured members, and a pair of lanterns for night work of the type used by the Fire Department. These are in addition to the usual lights for the car.

Even the finish of this outfit is distinctive. The body is painted a dark green color and the seal of the Society is set on each side of the trailer in the form of a large bronze medallion.



Unique Trailer Hauls Injured Animals

The unique vehicle was presented to the S. P. C. A. of Massachusetts, by one of the directors, Mrs. David Nevins, and has practical features that are possible only with a trailer

UNUSUAL COAL DELIVERY BY TRACTOR AND TRAILER

A five-ton Transport Tractor recently proved the economy of this type of motor vehicle for short hauls in the delivery of coal. On August 17th Greason Son & Dalzell, of Brooklyn, N. Y., delivered 17 six-ton loads in 8½ hours working time, covering 36.3 miles at an average speed of 10.6 miles per hour.

The yard from which the coal was hauled has narrow gangways which make it impossible for any motor unit unable to turn



Transport Tractor and Trailer Outfit Used by Greason, Son & Dalzell

The trailer is an ordinary three-horse coal wagon equipped with special wheels and a tractor connection in place of the front gear. This wagon had a steel gravity body with side delivery, which requires ten minutes to empty.

as short as a team of horses to operate at the corners. The coal was loaded from overhead chutes in the usual manner. With this tractor the weight on the front wheels does not vary, loaded or light, hence it is possible on short wagon scales to obtain accurate tare with trailer wheels and driving wheels on and front wheels off the scales.

At the point of delivery it was necessary to back the unit across the side walk into a narrow alley 10 x 30 ft. and to chute into a standard coal hole in the pavement. The short time which elapsed at each delivery

shows the ease of backing and maneuvering the tractor in close quarters.

On the first trip fifteen minutes were lost in opening the coal hole, and on a subsequent trip buckwheat was loaded instead of pea coal, which necessitated one extra dumping and reloading, time lost which was included in the statement of actual working time.

Weather conditions were favorable. The distance between the yard and the point of delivery was a trifle more than one mile, over good city pavement with a slight up-grade. The entire day's work with the ex-

ception of starting from a stand was accomplished on high gear in spite of the one-ton overload.

The showing made by this concern on short haul work explains the success which the Transport Tractor Co., of Long Island City, N. Y., have had with the steam coal trade. A three horse team attached to a duplicate wagon delivered eight loads at the same point in 10½ hours. The cost of operating the tractor showed a saving of nearly two-thirds in the cost per ton over the team.

IT IS STATED that during the twelve months ending June 30, 1916, tire manufacturers of the United States exported tires to the value of \$18,000,000. This is four times the amount exported during the preceding year, which shows that American tire business abroad has been placed upon a very satisfactory basis. A substantial increase is also noted in South American business.

WILSON BODY Co., Detroit, Mich., has sold its interests in the Detroit Weatherproof Body Co. We incorrectly stated in a former issue that the C. R. Wilson Body Co. had been taken over by the Weatherproof Body Co. The Weatherproof Body Co. was formed largely by members of the organization of the C. R. Wilson concern to enter the winter top business. Since the formation of that company, however, the automobile business has developed so rapidly that it has taken all the attention of the Wilson Body Co. to handle its business, and it has therefore sold its interests in the Weatherproof Body Co.

Make your product pay—advertise in the CCJ

Opinions of Some Truck Makers on the Trailer Question

The Following Answers Were Received to Letters Sent to the Truck Makers Concerning This Important Topic

ADVOCATES SEMI-TRAILER TYPE

To the Editor:

Your letter relative to the use of motor trucks in connection with trailers and semi-trailer types of bodies is most interesting, owing to the fact that we are strong advocates of both and are pushing the possibilities of this method of transportation to the utmost of our ability.

In connection with this phase of motor trucking, we strongly advocate the semi-trailer type of body in preference to the use of trailers as we believe that the latter, unless more intelligence is shown than has been in the past, is likely to result in seriously overloading and straining the motor truck, as the tendency and natural inclination under pressure of work is always to add "another one," without proper appreciation of the limitations and with the result that undue strain is placed upon practically all members of the vehicle.

In the case of trailers, our recommendations are to haul not more than the rated load capacity of the truck in addition to such load under normal conditions, but we believe that **one-half the normal rated load capacity** of the truck in the trailer represents better practice. Where the semi-trailer type of body is used in connection with our standard two-ton chassis, we recommend that the load carried not exceed four tons; of course, there are many instances met with from day to day whereby this same sized vehicle gets away with a seven and eight-ton haul, but, as you well appreciate, this subjects the truck to abnormal strains throughout.

We cannot ascertain from our owners using the semi-trailer type of body any increased wear on tires, although undoubtedly there is a certain additional wear taking place through this practice, but so much depends upon the driver that it is a point that could not be satisfactorily tested out except through a long series of experiments with the same individual in charge.

Relative to gasoline consumption, the average mileage obtained from a Wilson two-ton truck with its rated load is approximately from seven to eight miles per gallon, and the semi-trailer type of body attached to this same vehicle and loaded with four tons, will approximate six miles per gallon.

Regarding the best method of attaching a trailer to a motor truck, we believe that said attachment should be made to the frame and not to the axle. Where such vehicles are used in connection with our machines, the attachment is always so made. The writer, quite a number of years ago, carefully experimented with various forms of attachments with the result that he definitely concluded that any other method represented serious mechanical troubles in connection with axles, driving chain, springs, etc., and these would all hold true of the newer type of worm drive.

In our opinion, unless the machine were large and powerful enough to entail the use

of enough trailers to constitute a train, it is not necessary to apply a braking system to the trailer vehicles unless the brakes on the truck actuate, not only on the rear wheels, but on the propeller shaft as well.

A propeller shaft brake in itself creates a tremendous amount of strain not found where the brake assembly operates on the rear wheel drums, and this strain would be magnified many times when operating with trailers, so much so that if trailers were to be used, the brake design should be changed.

We believe that the semi-trailer type is more desirable than the true trailer type, inasmuch as a safe normal load may be placed upon it and the operation of driving and steering greatly simplified. Of course, there are a number of well designed trailers upon the market that will steer from either end, but in backing, these machines require the assistance of an extra man, which is dispensed with in the semi-trailer type of construction.

J. C. WILSON CO.

CHASSIS SHOULD NOT BE LOADED TO CAPACITY

To the Editor:

In our judgment there is reason enough why the load should be carried on trailers where conditions will permit, but the eight or twelve-wheel equipments are, as a rule, considered too cumbersome for use in the busy portions of the large cities, while the six-wheel type of equipments pass muster anywhere.

Answering the questions asked, will say that we do not consider the use of trailers is likely to cause injury to the power car excepting as the total load handled is excessive. A truck of 5-ton carrying capacity will ordinarily handle 10 tons if the trailers are used, and if all the load is carried on trailers, or practically all of it, the chassis will give you nearly double the miles travel during its natural life time than it would if it was loaded to capacity.

We have one machine that is handling from 600 to 800 tons per day over a one-mile round trip. This machine has been in constant service for five years and is good for twenty-five more, and probably has handled more tonnage to date than any four trucks of like capacity that are in the field, and it has never carried a pound of freight.

Trailers should, in our judgment, be attached to the rear end of the frame either by jaw coupler or universal coupler which is shown on the tram tractor. By using a four-wheel steer trailer and drawing it from this point, it can be made to trail without any trouble whatever.

You ask as to the best method of braking. We find that the double-acting contracting type of brake in connection with the magnetic brake is the safer and less likely to get out of order.

COUPLE-GEAR FREIGHT WHEEL CO.

WANTS TRAILER HITCH STANDARDIZED

To the Editor:

We believe that there is no doubt but that the use of trailers causes a considerably greater depreciation of the life of the truck. The amount of this depreciation depends very widely upon the conditions and upon the driver. On the other hand, there is no getting around the fact that for favorable conditions a trailer is a very good investment even though the truck will not last as long. The user is after the cheapest ton mile cost for delivering his product from one place to another. If the combination of truck and trailer will make a total cheaper cost than the truck alone, then it is at least for a time a paying proposition—one which the customer can probably afford to carry out regardless of whether it is good for the truck or not.

Generally speaking, trailers are more successful in flat country, hard roads, long hauls and capacity loads. Thus it is seen that there are conditions under which a trailer cannot wisely be used in conjunction with motor trucks.

One of the points you state to be considered in the matter is a possible injury to the truck through the use of trailers. On this proposition our records show a somewhat greater wear on rear tires, greater wear and tear on the driving parts, such as the transmission, clutch, differential, etc., although we have no actual figures by which we might arrive at an accurate conclusion. This amounts to probably between 15 and 20 per cent.

The additional consumption of gasoline varies widely according to the road conditions. However, we have made a few exhaustive tests in conjunction with our 3½-ton Model 175, operating with full load over average country roads and find that we have reached a ton mileage efficiency of 45 ton miles per gallon. It is safe to assume that the efficiency will be even greater with a trailer for the reason that the engine will be pulling more nearly its capacity load.

With reference to the attachment of a trailer, this should properly be by means of a spring trailer hitch to the rear end of the frame. This hitch should be braced diagonally with the side members of the frame. We are unable to give you sketch for the reason that the trailer hitch which we have been using up to date is not entirely satisfactory, neither have we yet succeeded in designing one which meets our entire approval. In this connection our engineer suggests that this subject be emphasized and that we suggest to the Commercial Car Journal that a campaign for a standardization of the trailer hitch be launched. This company has already taken the matter up with A. Ludlow Clayden, who is chairman of the Standards Committee of the S. A. E. Possibly if your publication should take up the subject of this trailer hitch it would aid

For its readers—information; for its advertisers—results. That's the purpose of the CCJ

The Big Profit Earner

That's what our enthusiastic dealers call the

**1000
Pound
Capacity**

Stewart

**Chassis
\$695**

No man who has carefully examined the 1000 pound Stewart, noted its excellent parts and features and observed it in action, could fail to be enthusiastic.

It's a winner from the word go, both in selling and in making good for the buyer. Get this Stewart started in any territory and it is one of the easiest sold propositions the trade has ever known.

The combination of internal-gear drive axle, unit power plant, overhead valves,

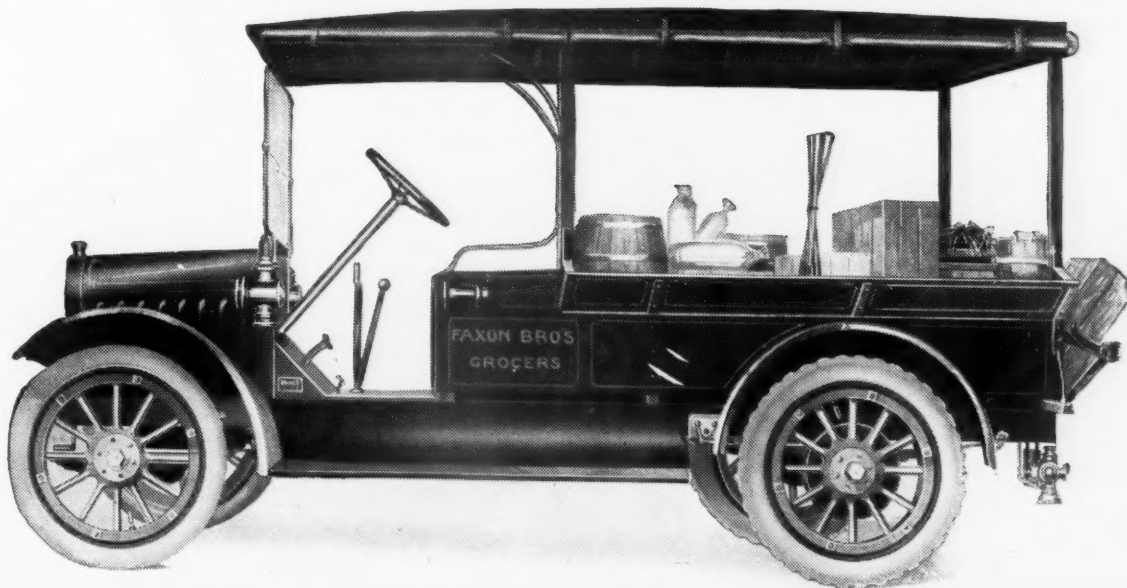
simplified control, magneto ignition, selective transmission, multiple-disc dry-plate clutch, improved non-oil universal joints, oversize brakes, tires and rims and other excellent parts and features, has produced a car that in ability, economy and capacity meets merchants' requirements as does no other.

The $\frac{3}{4}$ ton model at \$1290 and the $1\frac{1}{4}$ ton at \$1390 round out the most profitable line you can handle. Get our agency proposition—it means success.

Stewart Motor Corporation

Superior and Randall Sts.

Buffalo, New York



When Writing, Please Say—"Saw Your Ad. in the CCJ"

considerably in getting the matter straightened out and truck manufacturers would be able to arrive at the most efficient hitch possible to devise. It is our understanding that a number of trailer companies and truck companies are quite anxious to have this dimension standardized.

One point you bring up is the best method of braking. We have not experienced thus far any difficulty on this score for the reason that the trailers which have been used so far as we know with our trucks have been practically all in fairly level territory where the brakes of the trucks alone are sufficient to handle the job.

You raise the question which are more practical, two or four wheel trailers, and we believe that here there is some room for argument, although it seems to us that one style is suitable for one field and one for another, but we have a fairly clear line of demarcation, believing that in general field work and the service of contractors and similar concerns, the four wheel trailer now predominates in favor and should predominate.

SERVICE MOTOR TRUCK CO.

TRUCKS SHOULD HAVE EXTRA LARGE TRANSMISSION SETS

To the Editor:

In regard to several points in your letter, would say that the use of trailers on trucks not designed for this work is not recommended by us for the following reasons: Engine power and gear ratios are such that direct drive—high gear—can only be used on level roads, making it necessary to drive through second or low gear almost constantly. The transmission gear of the average truck is not sufficiently robust to stand this abuse.

The maximum loads that can be hauled depends on road. We use drawbar with coil spring to absorb shock in starting, also coil spring to take thrust in opposite direction. Drawbar should be attached to main frame, and never to axle.

When the trailer is heavy, brakes should be applied on trailer as well as tractor.

Trailer manufacturers have devices for this which automatically set the trailer wheels to follow tractor. Trucks should have extra large transmission gear and driving members, and gear ratio should be very low, say 15 to 1 or 20 to 1 on high.

THE UNITED STATES MOTOR TRUCK CO.

DEALERS' CONTRACT PROVIDES FOR TRAILERS

To the Editor:

Our attitude on the trailer question is best exemplified by the fact that we include in our dealers' contracts provision for tractor-trucks. We employ Martin's Fifth Wheel in standard connection.

In sections where road conditions are unusually good we believe a worm-drive tractor-truck often is found very desirable. It is our belief and recommendation, however, that for general tractor work, there is nothing to beat the good old chain-drive, the manufacture of which we have never discontinued.

As to maximum loads: we manufacture tractor-trucks with an 8-ton load rating, one with a 4-ton load rating, and one with a 3-ton load rating.

As to additional wear on tires or chassis: in the case of chain-driven tractors this has never been of such importance as to create attention.

As to the additional consumption of gasoline: this depends, of course, on road con-

ditions. Once the equipment, with trailer, is under way, there is little appreciable difference in consumption.

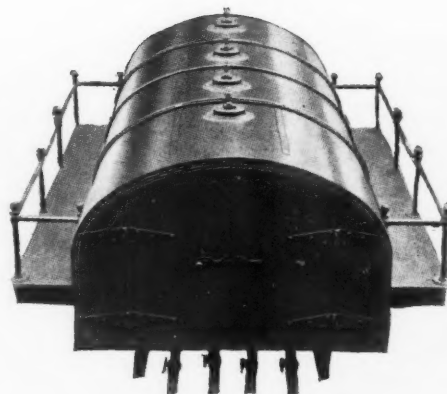
As to how the trailer should be attached: we use the fifth wheel attached to the frame. We do not believe in attaching it to the axle.

As to which is more practical, the two-wheel or four-wheel trailers: the two-wheel are the most sensible and economical, they being very easy to jack. On the other hand, there are conditions where four-wheel trailers are an absolute necessity, because they stand on their own legs.

WICHITA FALLS MOTOR CO.

QUALITY WELDED TANKS

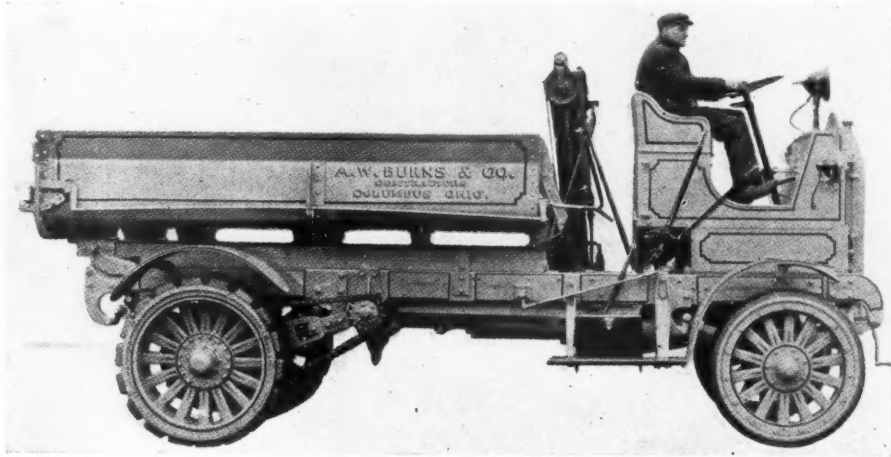
The Heil Co., 26th & Montana Avenues, Milwaukee, Wis., is manufacturing a line of underground gasoline tanks, truck tank equipments and automatic metal dump truck bodies. The underground gasoline tanks are made of a special product, which is known as Armco iron. The outside is coated with waterproofing and a coat of pure asphalt. Connections on the tanks can be had for any style oil pump. Prices range as follows: 120 gal., 26 in. diameter, 4 ft. long, \$19; 165 gal., 32 in. diameter, 4 ft. long, \$23.50; 210 gal., 36 in. diameter, 4 ft. with angles to avoid bulging and a standard



Quality Welded Tank

This illustration shows one of the elliptical shaped tanks. The can box shown at the rear has two doors fitted with 8 in. strap hinges bolted in place.

5 in. cast steel filler flange is fitted to each compartment with a cast iron shouldered cover. This cast steel filler flange is welded to the shell of the tank. Before welding the 1½ in. outlets to the bottom of each compartment the shell at each opening is flanged out slightly by a special process after which the connections are welded both on



The Automatic Dump Body

Side view of the Heil 130 cu. ft. automatic dump body, showing the clean lines and substantial construction

long, \$28; 315 gal., 36 in. diameter, 4 ft. long, \$33. Shells of the Quality welded delivery oil tanks are made of No. 12 gage B. A. steel and the heads of No. 10 gage B. A. steel, which is claimed to make a strong, serviceable tank. The heads are reinforced

the inside and outside, to make a firm connection. The automatic metal dump truck bodies are built in 70, 95 and 130 cu. ft. capacity. They are made of 10 gage steel countersunk riveted and are said to be durable and efficient.



F. W. D. With Road Oiler Trailer

F. W. D. tractor-trailer used for road oiling. The truck is made by the Four Wheel Drive Auto Company, of Clintonville, Wis.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought



Important Constructional Features

Continental Motors

*Timken-David Brown
Worm Drive Rear
Axles*

Ross Steering Gear

*Brown-Lipe Trans-
mission*

Eisemann Magneto

*Detroit Self-Lubrica-
ting Springs*

Stromberg Carburetor

"On the Job"—Always

Here's another illustration showing a Signal Motor Truck doing one of the things it is designed to do—another proof of that virility that keeps the Signal always on the job.

The fundamental virtue of Signal Motor Trucks is that ability to be "on the job" and stay on the job.

That is precisely what you buy a truck for. All other truck virtues fade into insignificance compared to the ability to be always *on the job*.

This quality bespeaks all other desirable qualities, for no motor truck *can* persistently stay *on the job* unless it has all the inherent virtues of right design, substantial construction, efficient mechanism and a wide factor of safety for overloads.

Ask a Signal owner about his truck, and when he says it is "on the job" he gives it the highest praise.

It's the delays, the holdups, the failures to "deliver the goods" that make a truck costly.

It's the ability to carry the load and obediently and willingly *keep on* carrying the load, without a murmur, that determines truck value, and makes Signal trucks the criterion of truck value.

Of course if the Signal trucks did not possess the cleanest chassis, the strongest construction, the healthiest and most reliable mechanism they simply could not stay on the job.

But they do stay "on the job"—and if that sort of a truck appeals to you as an owner or dealer, we will be pleased to submit full information about Signal Motor Trucks. Write

SIGNAL

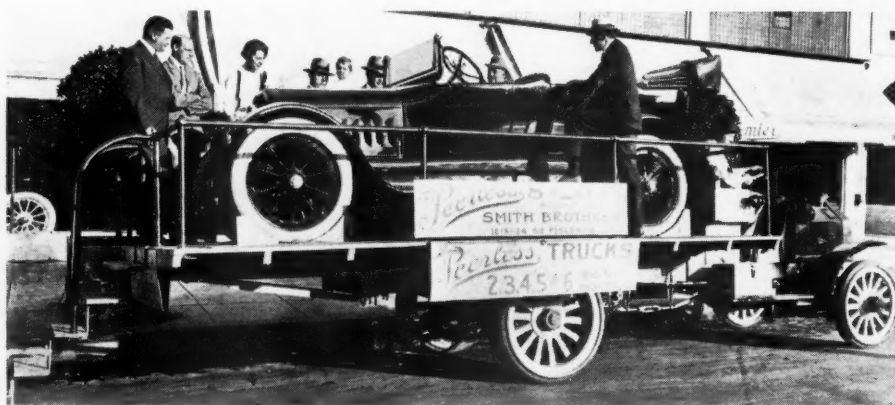
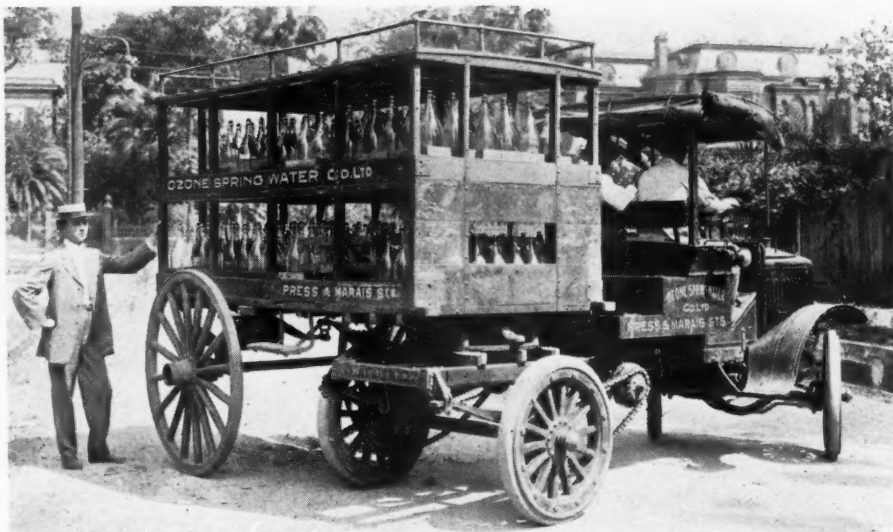
Motor Truck Company Detroit, Michigan

When Writing, Please Say—"Saw Your Ad. in the CCJ"

NOVEL TRAVELING SALESROOM

By FRANK H. REED

Smith Bros., southern California distributors of Peerless pleasure cars and trucks, met a unique situation in their territory with the Peerless Moving Salesroom shown in the illustration. The heavy European business of the Peerless factory has prevented Smith Bros. from obtaining trucks for domestic trade in their territory practically ever since the war. They received a truck for a demonstrator and a promise of delivery on orders shortly after starting their sales campaign on the new Peerless Eight. Quantity production plants of the Peerless factory and coincident expansion of sales effort made it necessary to introduce the new Peerless Eight promptly and effectively throughout the territory controlled by Smith Bros. They had their 4-ton Peerless truck equip-



A Moving Salesroom

Scheme conceived by Southern California Peerless Distributor

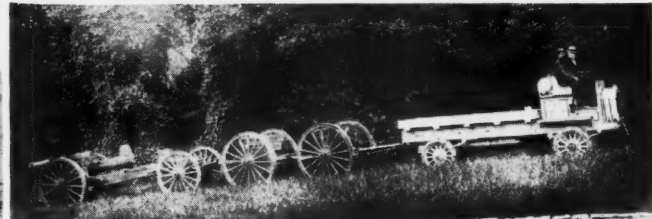
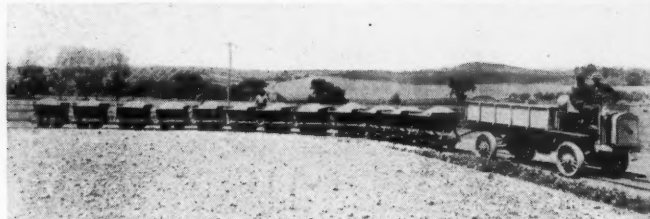
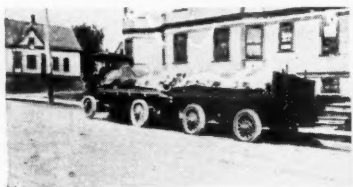
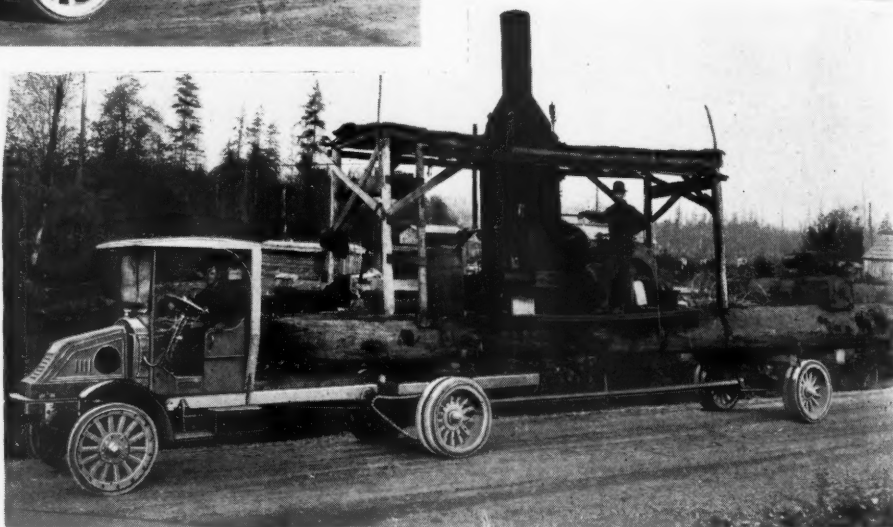
ped with a special platform body, surrounded by a strong railing, with carpeted floor and steps. On this they placed the Peerless Eight touring car. The outfit has been sent into every city, town and hamlet in southern California and in a month's time accomplished a thorough introduction of the new Eight and a reminder of the Peerless truck. Local benefit was obtained by routing the moving salesroom, on its out-of-town trips, over the principal business streets and boulevards used by automobile owners of the class who would be natural prospects for Peerless automobiles.

Wichita Tractor-Truck and Trailer

Ozone Spring Water Company, Ltd., Press and Marais Streets, New Orleans, used the outfit illustrated above. G. F. Spence, the man who introduced tractor-trucks into New Orleans, is seen immediately in the rear of the trailer, with one hand on the stanchion.

Kelly-Springfield Tractor-Trailer

The donkey engine, shown below, with equipment weighs over thirteen tons, and each supporting log one ton. This heavy load is being drawn by a Kelly three and a half ton truck, made by the Kelly-Springfield Motor Truck Company, of Springfield, Ohio.



F. W. D. Trucks in Service Hauling Trailers

The above illustrations show F. W. D. trucks in service hauling trailers. The Four Wheel Drive Auto Company recommends in using trailers with its trucks that the trailer load be limited to six tons, and if this recommendation is followed no injury to the truck will be evident

Advertising appropriations bring greatest returns when expended in the CCJ

ROSS GEARS

117 Truck Manufacturers use *Ross Steering Gears*

117 Able and experienced Truck Engineers endorse them.

W H Y ?

Because their design is perfect.

Because their workmanship is of the finest.

Because they contain the finest material available.

Because they stand the punishment.

Because they do not break.

Because they are durable.

Because they steer easily and safely.

Because they are essentially *Truck Steering Gears*.

Because they are well and favorably known in the Truck Industry and are a help to Truck Sales.

I N F A C T

Because they do their work successfully

*Write us for descriptive catalog and give
us an opportunity to quote you*

ROSS GEAR AND TOOL CO.

760 N. Heath St.

Lafayette, Ind., U. S. A.



Maccar Worm-Drive Truck With Demountable Power Plant

THE Maccar Truck Co., Scranton, Pa., is marketing the Maccar worm drive commercial car in four capacities, L, H, M and U, with capacities of 1-1½, 2½, 3½ and 5½ tons, respectively. The most striking feature about the Maccar chassis is the demountable unit power plant and its features. There have been, from time to time, a number of trucks built in which a specialty was made of an easily removable power plant, but this seems to be the first truck to have been built with the entire power plant, steering gear, radiator, clutch and transmission removable in such a short time and with so little undoing of parts.

This cradle which holds the demountable power plant is mounted on a three-point suspension and carried in a dust-proof housing which completely covers the fly-wheel and all running parts.

The engine on the model L has a bore of 4½ x 5¼ in. stroke, cylinders being cast in block. The Model H engine is 4½ x 5½ in., cylinders being cast in pairs. The engine of the Model M is 4½ x 5½ in., cylinders being cast in pairs.

Ignition is by high tension magneto, single system and shaft driven through a universal coupling. Carburetor is a Stromberg, using a gravity feed from a round seamless steel tank of large size mounted in the chassis under the driver's seat.

Lubrication is by force feed pump actuated from the camshaft in combination with splash to connecting-rods and equipped with sight gage. The cooling system includes a honeycomb radiator suspended in a special manner, centrifugal gear-driven pump and belt-driven fan.

Clutch and Transmission

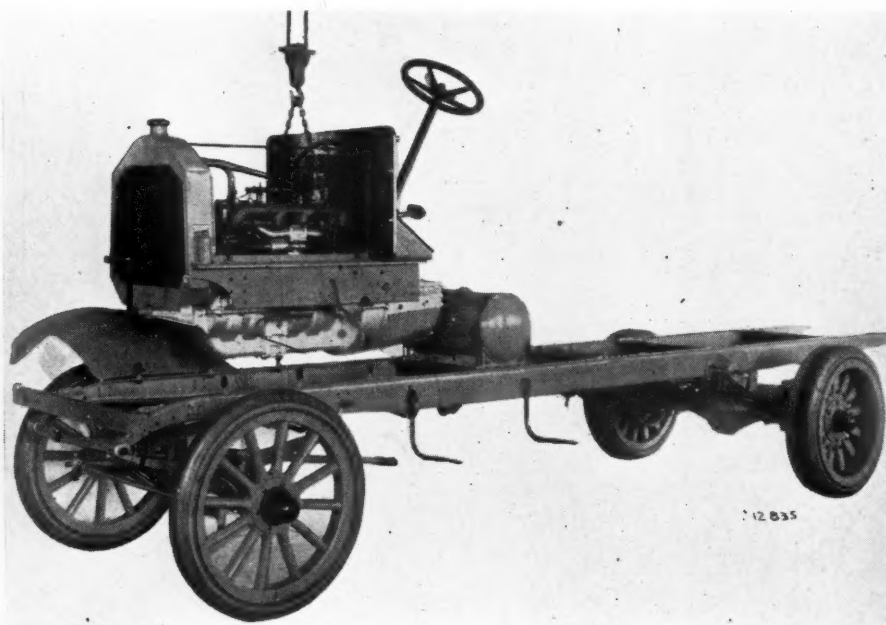
The clutch is of dry multiple disc type, extremely flexible and easy of operation. The transmission is of the selective sliding type, allowing three speeds forward and one reverse. Drive to the rear axle is through a shaft which is supported by a self-aligning bearing and universal joints to the worm.

Axles, Brakes and Springs

The front axle is a Timken I-beam type, equipped with Timken bearings. The rear axle is a Timken-David Brown worm-drive equipment. The brakes are duplex internal expanding type, completely enclosed and acting directly to the spokes of the rear wheels. Springs are semi-elliptical all round, being constructed from silicon chrome manganese steel. The spring bolts are of ample size, hardened and ground, and equipped with grease cups. The wheels are wood, of artillery type with extra heavy spokes.

Other Details

The speed of the engine is controlled by a governor of the centrifugal type which is set and sealed at the proper speed. Left



Demountable Power Plant

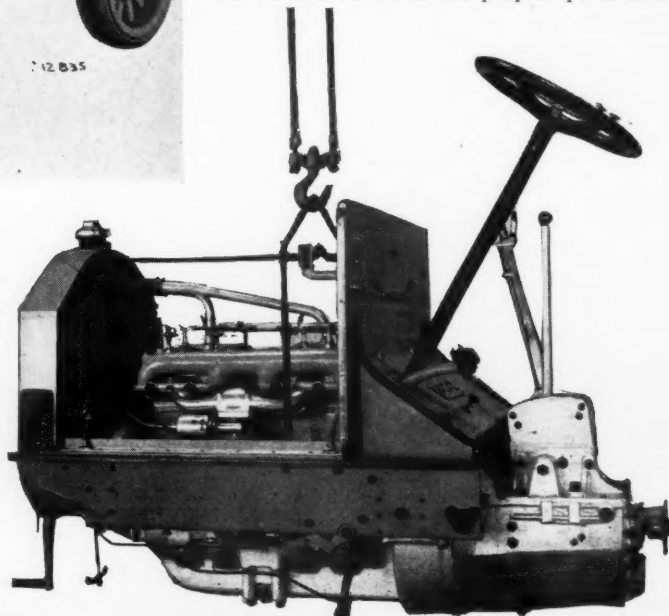
The engine, clutch, transmission, radiator, pump, magneto, carburetor, dash and toe boards, brake and foot pedals, steering gear and all spark and throttle controls are assembled in one cradle and so mounted into the frame.

By removing six nuts, disconnecting the drive shaft, brake and fuel connections, it can be removed and another unit substituted in less than thirty minutes without disturbing the driver's seat. This feature, which is the most substantial and extremely flexible construction in motor trucks, is practically a guarantee of service every day in the year.

Maccar Truck
Showing Mueller demountable unit power plant ready to mount in chassis.

Mueller Demountable Unit Power Plant

Used in Maccar truck. By removing six nuts, disconnecting drive shaft, brake and fuel connections, it can be removed and another unit inserted in its place in less than thirty minutes.



Interesting and helpful information; reputable advertisements—that's the CCJ

United States 'Solid Truck' Tires

The Lightest in the World and the Most Durable

It is a fact—curious perhaps—but a FACT, none the less, that the better the rubber compound used in a Solid Motor Truck Tire, the lighter that tire will be.

Volume for volume, size for size, United States Solid Truck Tires are the lightest now manufactured.

By the same token, they are the most durable—witness the testimony of hundreds of satisfied users.

United States Tire Company

1790 BROADWAY, NEW YORK



side drive with center control is used, service brake, clutch release and accelerator being operated by pedals through the toe board. The spark and throttle levers are mounted on top of the steering wheel. The frame is of pressed alloy steel, heat treated and provided with a heavy type bumper. The steering gear is irreversible, of worm and nut type.

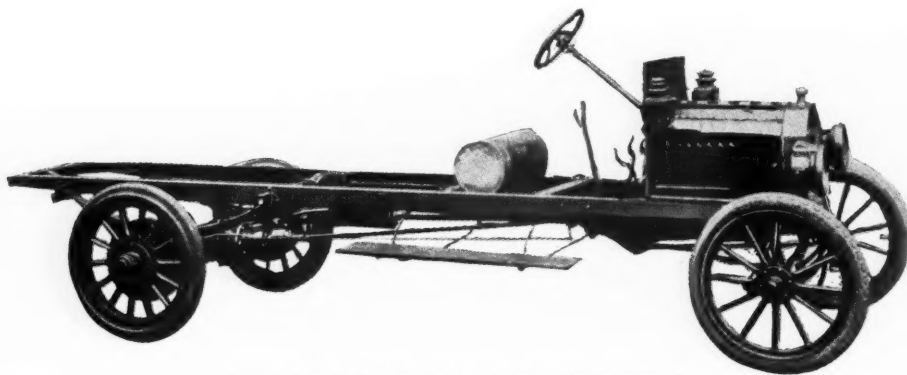
Equipment includes side and rear oil lamps, horn, tool box, jack and full set of tools.

Model	L	H	M	U
Capacity	1-1½ ton	2½ ton	3½ ton	5½ ton
Bore	4½ in.	4½ in.	4½ in.	4½ in.
Stroke	5¼ in.	5½ in.	5½ in.	5½ in.
Horsepower	30	40	40	40
Wheelbase	150 in.	162 in.	174 in.	186 in.
Tires—Front	36 x 4 in.	36 x 4 in.	36 x 5 in.	36 x 5 in.
Tires—Rear	36 x 5 in.	36 x 4 in. Dual	36 x 5 in. Dual	36 x 6 in. Dual
Price—(Chassis)	\$2,100	\$2,600	\$3,250	\$3,800

KELLEY CONVERTIBLE TRUCK ATTACHMENT

The Kelley convertible rear-system truck attachment for a Ford chassis has been designed and developed to meet the requirements of buyers needing a medium-weight carrier. In the production of this truck unit the Kelley Convertible Auto Truck

imposing it on the hollow or live axle, which provides for speed reduction through a set of spur gears at the wheels. Hyatt silent roller bearings are specified. Gear ratio is 6 to 1 and 7 to 1. General specifications for the units include: springs of crucible analysis steel, 48 x 2¼ in., 10 leaves; tires, Goodrich, solid rubber, 32 x



Assembled Truck Chassis Ready for Body

The company furnishes special bodies of various styles, suitable to any needs. These are said to be of standard make and reasonably priced

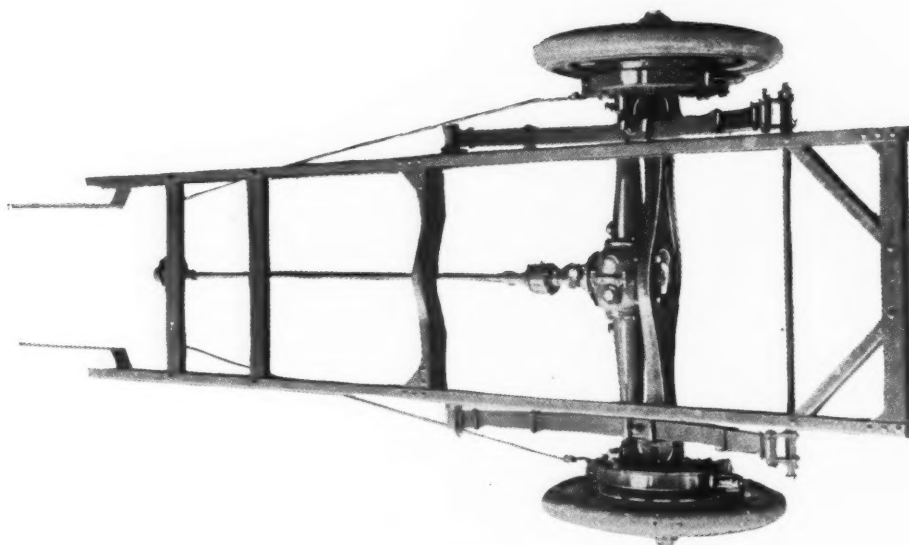
Co., 332 S. Michigan Ave., Chicago, Ill., specify thorough, dependable construction, of standardized parts, in order to give efficiency and economy.

The difference of opinion as to the relative merits of the worm and internal gear drive has led to the adoption of both of these types by the company, giving the buyer the option of ordering either one as preferred. The worm and gear are of straight Empire type. The worms are of 3½ per cent. nickel steel, case hardened and ground. Ratio is 7.2 to 1. The drive shafts are of chrome nickel steel, heat treated, three-quarter floating type. All the mechanism runs in oil; no grease cups are required. Worm thrust is taken on ball thrust bearings. Worm radial bearings are of the straight roller type. The internal gear axle is a Celfor solid one-piece rear or dead axle of I-beam type, designed to give the best disposition of metal to obtain maximum strength with minimum weight. This carries the load, instead of

3½ in.; wheels, seasoned hickory, fourteen 2 in. square spokes, steel bands; frame, pressed steel, 140 in. to dash, 164 in. with part carried past the hood; width, 32 in.; depth, 4 in.; carrying space, 9 ft. Drive shafts and hanger rods of nickel steel. Wheelbase, 127 in.; tread, standard, 56 in.; speed 15 to 18 miles. Maximum capacity, 3000 lbs. Price of the worm gear unit is \$385. The internal gear unit sells for \$365.

THE CLYDE MOTOR TRUCK Co. has purchased five acres at Farmingdale, L. I., having 15,000 ft. frontage on the Long Island R. R., with option of an adjoining 40 acres, and will construct a one-story factory of saw-tooth type, having about 12,000 sq. ft. of floor space, for the manufacture of motor trucks. It is incorporated for \$750,000. Mahlon C. Swartz is president; W. J. Melhiush, Jr., recently with the White Motor Co., is vice-president and general manager; P. R. MacLean, is secretary and export manager; E. E. Vreeland is treasurer; P. J. Holdworth, efficiency engineer and W. J. Kenlon, factory representative.

KENTUCKY WAGON MFG. Co. and the Dixie Motor Car Co., Louisville, Ky., owing to the rapid growth of business, has added three additional men in order to take care of the various departments and give proper service. W. I. Shaw, sales manager, has been promoted to the position of general sales manager, with the additional duties pertaining to the management of the business. Stephen K. Miller, assistant sales manager, has been made sales manager of the wagon department, which will include all farm wagons and trucks, etc. Frank H. Holman, one of the field managers, is now sales manager of the Old Hickory gasoline truck department. A. B. Challinor, who has been identified with the pleasure car business since the early days of the industry, has become sales manager of the pleasure car department.



Top View of Kelley Attachment

The choice of worm or internal-gear drive at the option of the buyer is a feature of this unit. Simplicity of construction and ease of assembling form the basis for the maker's claim of moderate cost and low operating expense.

The CHILTON ideal—honest circulation; results to advertisers—fully exemplified in the CCJ

SMITH WHEELS

"EVERLASTING"

Tire Mileage Increased—Gasoline Mileage Increased—Truck Life Increased!

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American	Hall	Moreland
Chase	Hurlburt	Packard
Cunningham	Indiana	Riker
Federal	Kelly-Springfield	Selden
Garford	Kissel	Service
Gramm-Bernstein	Knox	Signal
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**Smith Wheels Guaranteed during
LIFE OF TRUCK on which
originally placed.**

SMITH WHEELS MAKE TRUCKS MORE SALEABLE

Smith Wheels made for trucks of any size and to fit any axle.



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Selden Has New Fifteen Hundred Pound Model G Chassis, \$985

A new model Selden, to be known as the model G, has been announced by the Selden Motor Vehicle Co., Rochester, N. Y., and distributed by the Selden Truck Sales Co., of the same address. This new model has a carrying capacity of 1500 lbs.

Engine

The engine is of the 4-cylinder, vertical, cast in block type with unit power plant, engine, clutch and transmission. The bore is $3\frac{3}{8}$ in. and stroke $4\frac{1}{8}$ in. with a maximum speed of 1260 r.p.m. controlled by a sealed governor. Ignition is furnished by a high tension magneto which is driven at crankshaft speed. Cooling is taken care of by a thermo-syphon system, using a vertical tube radiator and a fan mounted on the car.

Clutch and Transmission

The clutch is of multiple disc, dry plate type and is integral with the transmission, which is of the selective sliding type, giving three speeds forward and one reverse. The gears and shafts are of ample proportions and are made from heat-treated steel. The drive from the unit power plant is through two universal joints and a 2 in. diameter tubular propeller shaft to the rear axle. The rear axle, it should be noted, is a Sheldon worm drive (David Brown type) of semi-floating construction.

The front axle is an I-beam forging, $1\frac{5}{8}$ x 2 3-16 in., with steering knuckles of $3\frac{1}{2}$ per cent. nickel steel, the whole being

double heat-treated. The tread on the front axle is 56 in., while that of the rear is 58 in.

Brakes, Springs and Wheels

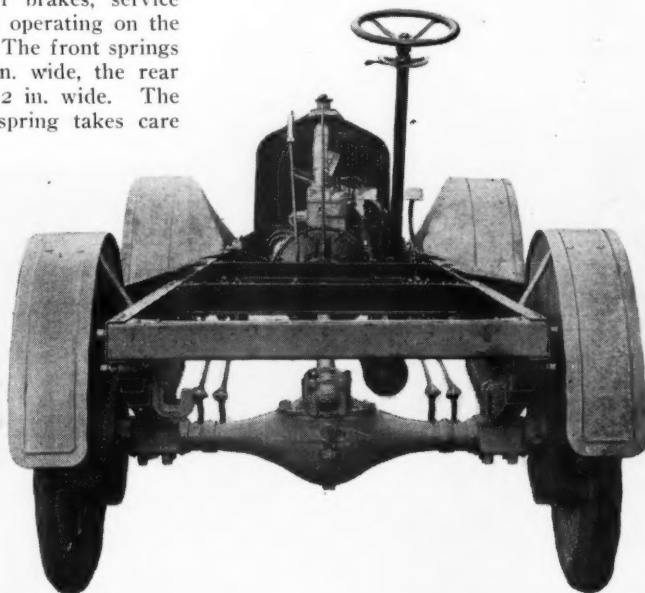
There are two sets of brakes, service and emergency, both sets operating on the rear wheel brake drums. The front springs are 38 in. long by $1\frac{3}{4}$ in. wide, the rear set being 48 in. long by 2 in. wide. The front half of the rear spring takes care of both torque and drive.

The wheels are of the artillery type, hickory, the front wheels having twelve $1\frac{3}{8}$ in. spokes, the rear pair having the same number of $1\frac{1}{2}$ in. spokes. S. A. E. rims are furnished as standard equipment, allowing detachable tire rims to be used. Pneumatic tires are

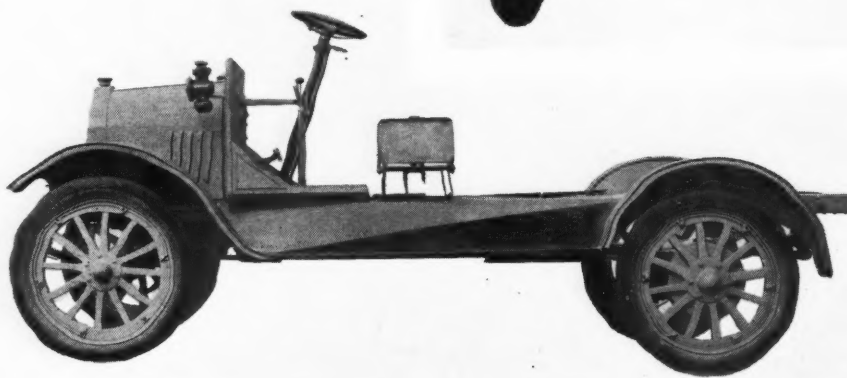
used on both front and rear wheels, sizes being respectively, $32 \times 3\frac{1}{2}$ in. and 33×4 in. Wheelbase is 110 in.

Equipment

The equipment on the new Selden model G delivery car includes jack, set of tools, tire pump, tire repair kit, extra demountable rim and three oil lamps. The elec-



Rear of Selden
Fifteen Hundred
Pound Chassis



Side View of
Selden Model G
Chassis



The Fifteen Hundred Pound Selden Model G

Shown with covered flareboard body. The chassis price is \$985; 20 h.p. engine; thermo-syphon cooling; worm-drive rear axle and pneumatic tires

tric engine starting and lighting generator with combination oil and electric side and tail lamps will be furnished at an additional cost of \$80.

The price of the chassis as above noted is \$985.

SUNLIGHT MFG. Co., Tampa, Fla., has opened a modern garage equipped to do any work in the auto line, and is especially prepared to make any part which may be needed. The company will take a good automobile agency, but has not yet decided on the car. It is also building a four-wheel drive truck of its own design, which it is believed will fill the wants of the Florida farmer.

WAYNE TRACTOR Co. has been formed with a capital stock of \$300,000 and has acquired a factory 260 x 60 ft., in which it will produce a light weight tractor designed to be entirely dust-proof. Officers are Alfred Violette, of Edmonton, Canada, president and general manager; Peter Wiederhold, vice-president; George I. Wicks, treasurer. Executive offices have been located at 221 Stevens Bldg., Detroit, Mich.

Everybody who is anybody in the truck industry reads the CCJ